

CONTRACT TITLE:

Analysis of hydroacoustic data for large reef fish targets in Puerto Rico

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EXECUTIVE SUMMARY

This report summarizes the findings and outcomes of an in-depth analysis of the 2002 and 2003 Red Hind Hydroacoustic Surveys datasets. Hydroacoustic survey datasets were originally analyzed for the presence, distribution and density of fish aggregations likely representing red hind around Puerto Rico and the surrounding islands. It is well known that numerous species utilize habitats that are considered important locations for reef fish spawning aggregations. Mobile hydroacoustic surveys provide a method to continuously sample along a transect and record the presence and position of underwater targets in three-dimensions. Therefore, the datasets were reanalyzed to isolate, count and determine the spatial location of other large targets that could represent other large reef species of interest.

Databases were produced for each year's survey. The databases include the date and time of observation and the three-dimensional position (latitude, longitude and depth) of each individual target as well as information on the target's acoustic size (proportional to fish size). Results show that solitary fish targets were in close proximity with identified aggregations as well as in areas where fish aggregations were not previously identified. In general, a greater number of fish targets were found in water column depths between 30-80 m and the majority of the fish targets were observed within 10 m of the bottom. There were, however, several targets that were off the shelf break over deep water (>>150 m). A greater number of fish were found during the surveys in 2003 in the northern regions of Puerto Rico when compared to the 2002 surveys of the southern regions. Target strength distributions suggest that several solitary targets were slightly larger as a group than the average target size of fishes in the aggregations. Findings from these analyses could be used to identify regions where fish targets are in high densities a help to prioritize regions for future sampling of large reef fish species.

Analysis of 2002 and 2003 hydroacoustic survey data for large reef fish targets around Puerto Rico

Objectives

The overall objective of this project was to reanalyze a set of databases that were originally collected during a survey for red hind (*Epinephelus guttatus*) spawning aggregations around Puerto Rico during the spring spawning season of 2002 and 2003. Original survey design is presented as a map in Figure 1. Details regarding the system specifications, transducer deployment, field calibrations, and survey design can be found elsewhere (HTI 2002, 2004). In brief, the original analysis included the delineation and identification of large aggregations of fish in the echograms followed by estimates of abundance and biomass using echo integration (HTI 2002, 2004). For this project, solitary large targets that were not associated with the previously identified aggregations were manually identified in each transect dataset. Since their identity with respect to species remains unknown, only the acoustic size and approximated fish size (based on a generalized target strength-fish length relationship) are reported.

File Processing and Data Management

The mobile survey datasets that were reanalyzed from the compliment of February 2002 and March 2003 survey databases are presented in Table 1. Individual files for each sampling day and each region or hydroacoustic system and vessel were merged into a single large database corresponding to an individual system and sampling day. The databases were converted to MS Access 2000 or 2002 for analysis and compatibility of queries for data reduction, export, tabulation and graphical analysis. The remaining files had errors from data collection (most were noted as such in the field notes) or were associated with other objectives such as *in situ* system calibration or cage trials used to calculate fish size-target strength relationships (see HTI 2002, 2004).

Each file was read into HTI Echoscape (v. 2.11 beta release b). For most files, especially 2002, the bottom was manually edited using BotEdit function according to the depth of the water column as seen on the echogram window in Echoscape. Geographic positioning systems (GPS) were an integral component of each hydroacoustic system and recorded the position of the vessel frequently. The Bottom Table in each database was processed using a Select Query in MS Access to extract the bathymetric data and convert the latitude and longitude into decimal degrees for use in the GIS. Depth and distance along transects were prepared for incorporation in the GIS to mark the path of each transect and provide depth information to compare with the depth distribution of tracked fish targets.

Manual tracking was used to accumulate groups of echoes as individual targets that would likely represent large fish that were not associated with previously identified aggregations. There were strict criteria that had to be met in order for these new targets to be identified as fish. 1) Traces included at least 3 consecutive echoes with less than a 2 ping gap between echoes (though generally 1 or less). 2) The trace pattern had a general straight line shape and direction that would indicate a single fish passing through the beam alongship as would be suggested if the transducer was moving at a rate much faster than the fish. 3) Target strengths were greater than -50dB.

Metrics were calculated for each individual fish trace. All fish that were tracked were assigned a spatial position in three dimensions. The X,Y position in latitude and longitude (decimal degrees) were provided by GPS records from the depth records as described above. The ping number that the fish entered the beam was cross-referenced to the corresponding GPS record. Z position, indicated by the range from the transducer (taken as depth from the surface), was provided by the raw echo return data. The nearest bathymetric record was then matched with the position of the fish and the distance from bottom was calculated for each fish. Finally, the average target strength (TS in dB) was calculated for each fish trace and the number of echoes for each fish trace was used to identify the original aggregations (usually much greater than 10 echoes) from the newly tracked fish (usually less than 6 echoes). The TS could be used to infer possible fish target size (total length) using established equations on regional fish species or through a generalized equation available in the literature.

Data visualization and summary of findings

Data were incorporated into a GIS to visualize the spatial data. Individual fish targets were plotted along transects according to region. In general, individual fish targets were found in mid-depth water and close to the bottom (within 5 m). Figures 2 and 3 show the spatial distribution of the fish aggregations that were identified during previous analyses (HTI 2002, 2004) and individual and solitary targets that were tracked during this project, respectively. Both figures are coded according to the year of the survey.

Comparisons between 2002 and 2003

There were more solitary fish identified from the northern coast (2003) survey than from the southern coast (2002) survey (Table 1). In 2002, the southern region held the fewest fish, whereas several fish were found in the southwest and west and in the southeast and near Vieques (Figure 3). In 2003, fish were found throughout the survey region, though more concentrated near Culebra (Figure 4). Target strengths were similar between years with a modal target strength of -42 dB and a range of -50 to -26 dB (Figure 5). Target strengths were converted to approximate fish size using the equation established by HTI (2004) and presented in Figure 6. Depth distributions for fish were similar between the two years, with most fish between 30 and 80 m deep (Figure 7a & 8a). A wider range of water column depth was sampled in 2002, and very few fish were identified in these very shallow depths. In addition, more deep water was sampled in 2002 (Figure 7b & 8b). This alone may explain why more fish were counted and identified in 2003 when compared to 2002. Finally, most fish were with 5m of the bottom in both years, though there was a wider range of distance off bottom in 2002 when compared to 2003 (Figure 7c & 8c).

Other interesting findings

Although most fish were found in close proximity to the bottom and generally within 30-80m water column depth, there were several instances where large targets were found in small groups or solitary in very deep (>>150 m) water. In most cases, it appeared from the echogram that these targets may still have been close to the shelf-break, but further detailed bathymetric data in the sampling region is necessary. These targets could represent large pelagics or large fishes associated with the shelf-break. The distribution of these targets found over deep water is presented in Figure 8 and the target strength frequency distribution is presented in Figure 10. Because most of the transect coverage were within the near-shore continental shelf, this map

represents only a small sampling of this deep-water region. Such deep targets were found in the southwest, southeast and northeast (Figure 9).

Recommendations for future data and media handling

Currently, data collected during the hydroacoustic surveys and those datasets used to produce this report are in three forms:

1. Original raw ASCII datafiles. These files are produced in real-time during field surveys using HTI Digital Echo Processor. These files have not been altered and represent all the raw echoes (*.RAW), bottom/bathymetry and GPS data (*.BOT), echo integration data (*.INT) and fish tracking parameters (*.ECH and *.FSH). Analysis of these files requires the use of HTI Echoscape or SonarData Echoview (with limitations).
2. ACCESS database files. These databases are compilations of the above datafiles as produced using HTI Echoscape. The ASCII files above in essence become Tables in a database. These ACCESS databases are saved as Version 2002, and are not compatible with versions of Microsoft Access earlier than version 2000. All information from the original raw ASCII datafiles is contained and is unaltered in these databases except for 2 cases: A) where bottom/bathymetry during data collection was set at a fixed range (usually maximum distance of ping rate), these data have been edited and updated to correspond with visual estimates of the bottom depth in the echogram, and B) fish tracks have been added as part of this contract. These tracks are identified as USER categories, different from the previously identified aggregations by HTI personnel. Further analysis of echogram representations of these databases will be require the use of HTI Echoscape, as this is the only program currently available to read these database files. Database and SQL based queries can be used to further summarize and organize these databases without the need for visualization software.
3. GIS Coverages. GIS shapefiles were created from the Bottom Table and Tracked Fish tables in each of the databases. Shapefiles were created in ArcGIS 8.3, though they can be used in any version of ArcGIS or ArcView. These files represent combinations of the Bottom and Tracked Fish tables from the Access database files. All original aggregations identified by HTI personnel (see HTI 2002, 2004) as well as fish targets that were tracked for this contract are included. Metrics included in these files include continuous bathymetric readings along transects, GPS coordinates (in decimal degrees), geocoordinates for the location of fish and aggregations each target's (or aggregation's) depth from surface, water column depth at location and distance from target to bottom, acoustic target size (in dB) and the original ASCII and database file where the fish track originated.

Raw sound data collected during both survey years are also contained on original DAT tapes with original data logs for reference. These tapes represent the acoustic data as collected in the field. Since the data collection parameters used to collect the data on the tapes is the same as was used to process the ASCII files using DEP, it is not necessary to reprocess the DAT tapes. Currently, processing these tapes would require the use of an HTI Model 241 Echosounder, a DAT player/recorder, and HTI DEP software installed on a computer controlling the

echosounder. Furthermore, while GPS data is encoded on these DAT tapes, it is not currently possible to extract the GPS information from the DAT in post-processing. Therefore, the only georeferencing information available is in the existing original raw ASCII datafiles, the Access databases and the GIS coverages. In the future, there may be advances in data handling capabilities in HTI or other third party vendor software (such as SonarData Echoview) that will permit additional analysis of the data stored on the DAT tapes, such as “samples” format and data processing. It is recommended that these tapes be maintained in a dry, cool location for storage.

Literature Cited

- HTI. 2002. Hydroacoustic evaluation of spawning red hind (*Epinephelus guttatus*) aggregations along the coast of Puerto Rico in February 2002. HTI Project 1072, Prepared for Commonwealth of Puerto Rico, Department of Natural Resources. 56 pp + v.
- HTI. 2004. Hydroacoustic evaluation of spawning red hind (*Epinephelus guttatus*) aggregations along the coast of Puerto Rico in March 2003. HTI Project 1380, Prepared for NOAA/NMFS, Southeast Fisheries Science Center. 66 pp + v.

Table 1 (and following pages). Original files collected during a) 2002 and b) 2003 Red Hind Aggregation Survey grouped by year and system (or region) and counts of original aggregations and solitary large targets. Aggregation metrics and details are found in HTI (2002, 2004) The major sampling regions are represented in Figure 1.

A)	Region	System	MergedFile	File	Sample Date	Aggregations	Solitary Fish
				A0591216	28-Feb-02	2	4
				A0591313	28-Feb-02	2	2
				A0591438	28-Feb-02	4	6
				A0591507	28-Feb-02	11	2
				A0591535	28-Feb-02	11	0
				A0591605	28-Feb-02	9	6
	West	System A	A059.MDB	A0591632	28-Feb-02	2	1
				A0591700	28-Feb-02	3	3
				A0591718	28-Feb-02	4	6
				A0591741	28-Feb-02	0	3
				A0591842	28-Feb-02	0	1
				A0591915	28-Feb-02	2	6
				A0591946	28-Feb-02	0	1
				A0600929	1-Mar-02	6	2
				A0601015	1-Mar-02	1	0
				A0601041	1-Mar-02	3	0
				A0601200	1-Mar-02	1	0
	Desecheo and West	System A	A060.MDB	A0601251	1-Mar-02	0	2
				A0601340	1-Mar-02	0	2
				A0601352	1-Mar-02	1	2
				A0601419	1-Mar-02	2	3
				A0601429	1-Mar-02	2	0
				A0601445	1-Mar-02	1	4
				B0581503	27-Feb-02	0	8
				B0581600	27-Feb-02	3	0
	Southeast	System B	B058.MDB	B0581900	27-Feb-02	0	16
				B0582008	27-Feb-02	4	4
				B0582200	27-Feb-02	0	1
				B0591026	28-Feb-02	0	10
				B0591040	28-Feb-02	2	0
				B0591100	28-Feb-02	6	8
				B0591214	28-Feb-02	0	1
	Vieques	System B	B059.MDB	B0591331	28-Feb-02	1	0
				B0591400	28-Feb-02	4	0
				B0591500	28-Feb-02	2	0
				B0591700	28-Feb-02	2	1
				B0591843	28-Feb-02	0	5
				B0600722	1-Mar-02	1	2
				B0600751	1-Mar-02	2	4
				B0600801	1-Mar-02	2	1
				B0600900	1-Mar-02	1	0
	Southeast	System B	B060.MDB	B0600951	1-Mar-02	1	0
				B0601000	1-Mar-02	5	4
				B0601100	1-Mar-02	1	0
				B0601143	1-Mar-02	1	0
				B0601200	1-Mar-02	1	5

			C0580620	27-Feb-02	1	0
			C0580631	27-Feb-02	2	0
Southwest	System C	C058.MDB	C0580700	27-Feb-02	0	3
			C0580800	27-Feb-02	0	3
			C0580832	27-Feb-02	1	0
			C0580913	27-Feb-02	1	1
			C0590300	28-Feb-02	1	0
			C0590316	28-Feb-02	1	0
			C0590352	28-Feb-02	1	1
			C0590400	28-Feb-02	1	3
			C0590450	28-Feb-02	1	0
			C0590522	28-Feb-02	0	2
Southwest	System C	C059.MDB	C0590543	28-Feb-02	0	1
			C0590601	28-Feb-02	1	1
			C0590608	28-Feb-02	1	1
			C0590903	28-Feb-02	1	0
			C0590915	28-Feb-02	1	0
			C0590924	28-Feb-02	1	0
			C0591134	28-Feb-02	0	1
			C0591150	28-Feb-02	0	1
			C0600234	1-Mar-02	0	2
			C0600246	1-Mar-02	3	0
			C0600253	1-Mar-02	1	0
			C0600300	1-Mar-02	1	0
			C0600303	1-Mar-02	1	0
			C0600331	1-Mar-02	1	0
			C0600407	1-Mar-02	2	1
			C0600423	1-Mar-02	1	2
Southwest	System C	C060.MDB	C0600435	1-Mar-02	2	0
			C0600500	1-Mar-02	2	4
			C0600523	1-Mar-02	1	1
			C0600530	1-Mar-02	2	0
			C0600600	1-Mar-02	1	7
			C0600611	1-Mar-02	4	8
			C0600636	1-Mar-02	1	0
			C0600646	1-Mar-02	1	0
			C0600718	1-Mar-02	3	0
			D0590900	28-Feb-02	2	0
			D0590933	28-Feb-02	4	2
			D0591000	28-Feb-02	1	3
			D0591004	28-Feb-02	1	0
			D0591008	28-Feb-02	6	3
South	System D	D059.MDB	D0591100	28-Feb-02	5	0
			D0591127	28-Feb-02	4	1
			D0591151	28-Feb-02	3	2
			D0591200	28-Feb-02	4	0
			D0591300	28-Feb-02	1	1
			D0591343	28-Feb-02	1	0
			D0591400	28-Feb-02	5	2
			D0600749	1-Mar-02	2	0
			D0600856	1-Mar-02	4	3
South	System D	D060.MDB	D0600951	1-Mar-02	2	0
			D0601046	1-Mar-02	1	4
			D0601209	1-Mar-02	6	1
			D0601452	1-Mar-02	1	5
Grand Total					201	196

B)	Region	System	MergedFile	File	Sample Date	Aggregations	Solitary Fish
				Kf0781031	19-Mar-03	0	3
				Kf0781200	19-Mar-03	1	30
				Kf0781300	19-Mar-03	4	9
				Kf0781342	19-Mar-03	1	0
	North	System K	Kf078.MDB	Kf0781400	19-Mar-03	1	6
				Kf0781415	19-Mar-03	0	5
				Kf0781503	19-Mar-03	2	11
				Kf0781543	19-Mar-03	3	5
				Kf0781600	19-Mar-03	3	9
				Kf0790837	20-Mar-03	0	20
				Kf0790900	20-Mar-03	7	2
				Kf0790926	20-Mar-03	1	0
				Kf0791000	20-Mar-03	0	3
				Kf0791030	20-Mar-03	0	9
	Northwest	System K	Kf079.MDB	Kf0791101	20-Mar-03	3	19
				Kf0791200	20-Mar-03	0	12
				Kf0791230	20-Mar-03	1	5
				Kf0791301	20-Mar-03	2	24
				Kf0791521	20-Mar-03	27	15
				Kf0791600	20-Mar-03	3	13
				Kf0791700	20-Mar-03	0	2
				Mf0781126	19-Mar-03	1	0
				Mf0781217	19-Mar-03	0	1
				Mf0781301	19-Mar-03	2	10
				Mf0781334	19-Mar-03	3	13
				Mf0781400	19-Mar-03	0	2
	Culebra	System M	Mf078.MDB	Mf0781408	19-Mar-03	3	3
				Mf0781414	19-Mar-03	1	7
				Mf0781427	19-Mar-03	0	9
				Mf0781500	19-Mar-03	1	8
				Mf0781536	19-Mar-03	4	4
				Mf0781612	19-Mar-03	3	0
				Mf0790725	20-Mar-03	0	3
				Mf0790800	20-Mar-03	1	2
				Mf0790829	20-Mar-03	0	5
				Mf0790901	20-Mar-03	1	18
				Mf0790927	20-Mar-03	0	16
				Mf0791000	20-Mar-03	2	4
	Northeast	System M	Mf079.MDB	Mf0791100	20-Mar-03	2	3
				Mf0791127	20-Mar-03	1	0
				Mf0791142	20-Mar-03	0	4
				Mf0791203	20-Mar-03	1	0
				Mf0791218	20-Mar-03	1	0
				Mf0791232	20-Mar-03	1	1
				Mf0791304	20-Mar-03	1	1
				Mf0791332	20-Mar-03	0	1
				Sf0780415	19-Mar-03	7	19
				Sf0780500	19-Mar-03	63	25
	Desecheo	System S	Sf078.MDB	Sf0780600	19-Mar-03	11	5
				Sf0780618	19-Mar-03	6	0
				Sf0780621	19-Mar-03	8	9
				Sf0790316	20-Mar-03	18	6
	Mona	System S	Sf079.MDB	Sf0790354	20-Mar-03	3	0
				Grand Total		204	381

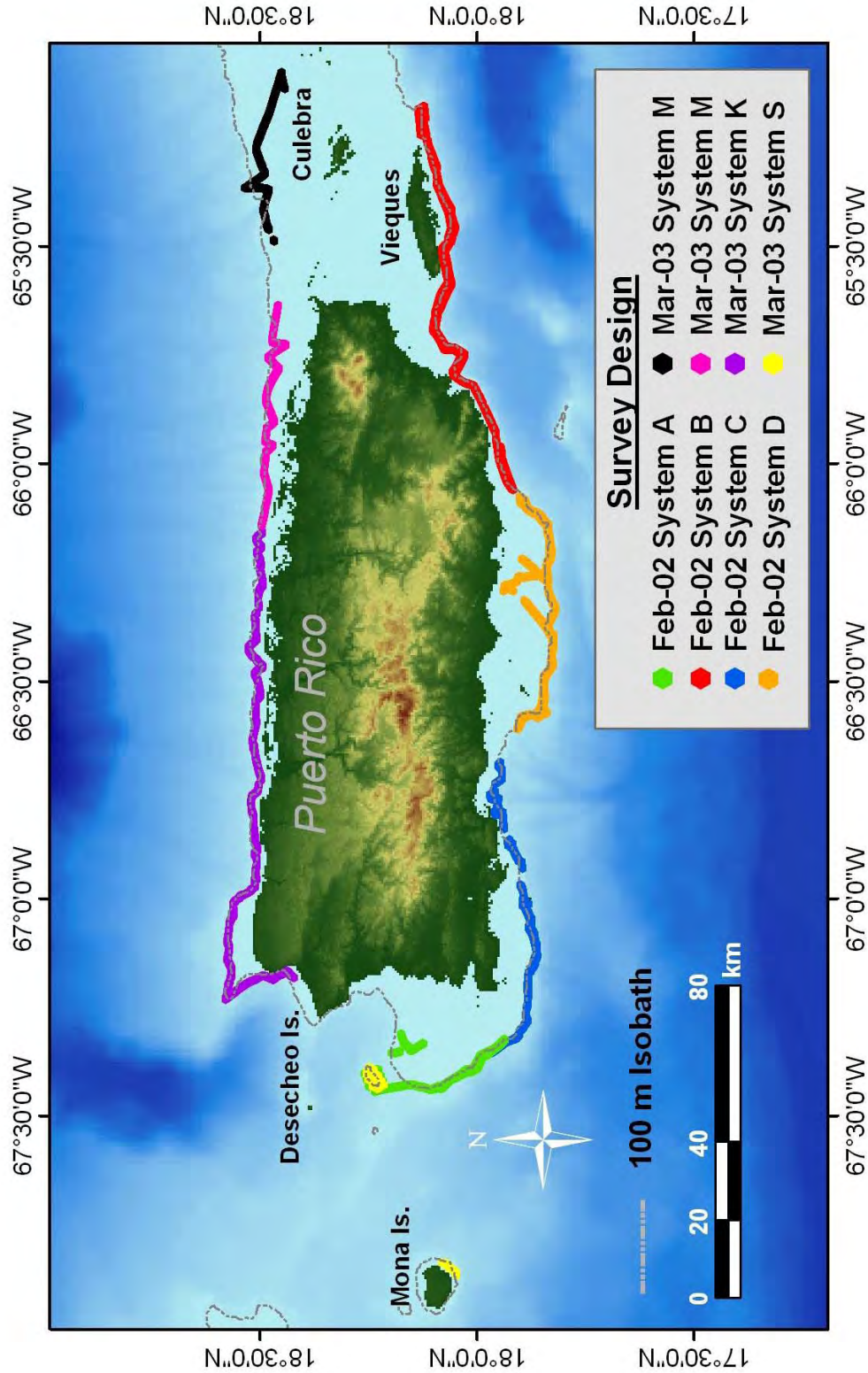


Figure 1. Map of Puerto Rico and surrounding islands with bathymetry and topography as false colorshading and 100-m isobath added for reference. Sampling Regions are labeled and color coded. Associated files within these regions are listed in Table 1.

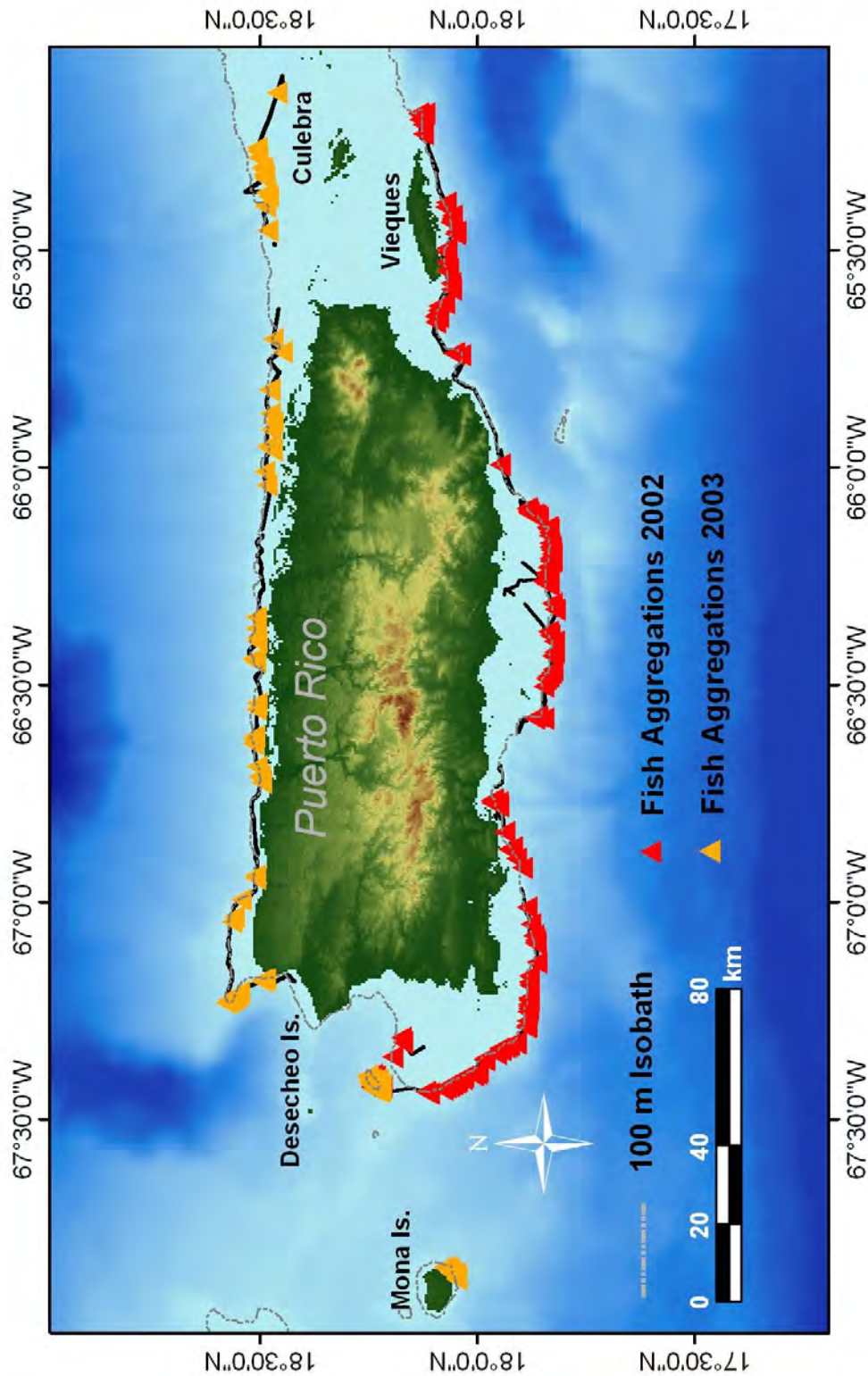


Figure 2. Location of previously identified fish aggregations. Refer to original reports for more details on these aggregations.

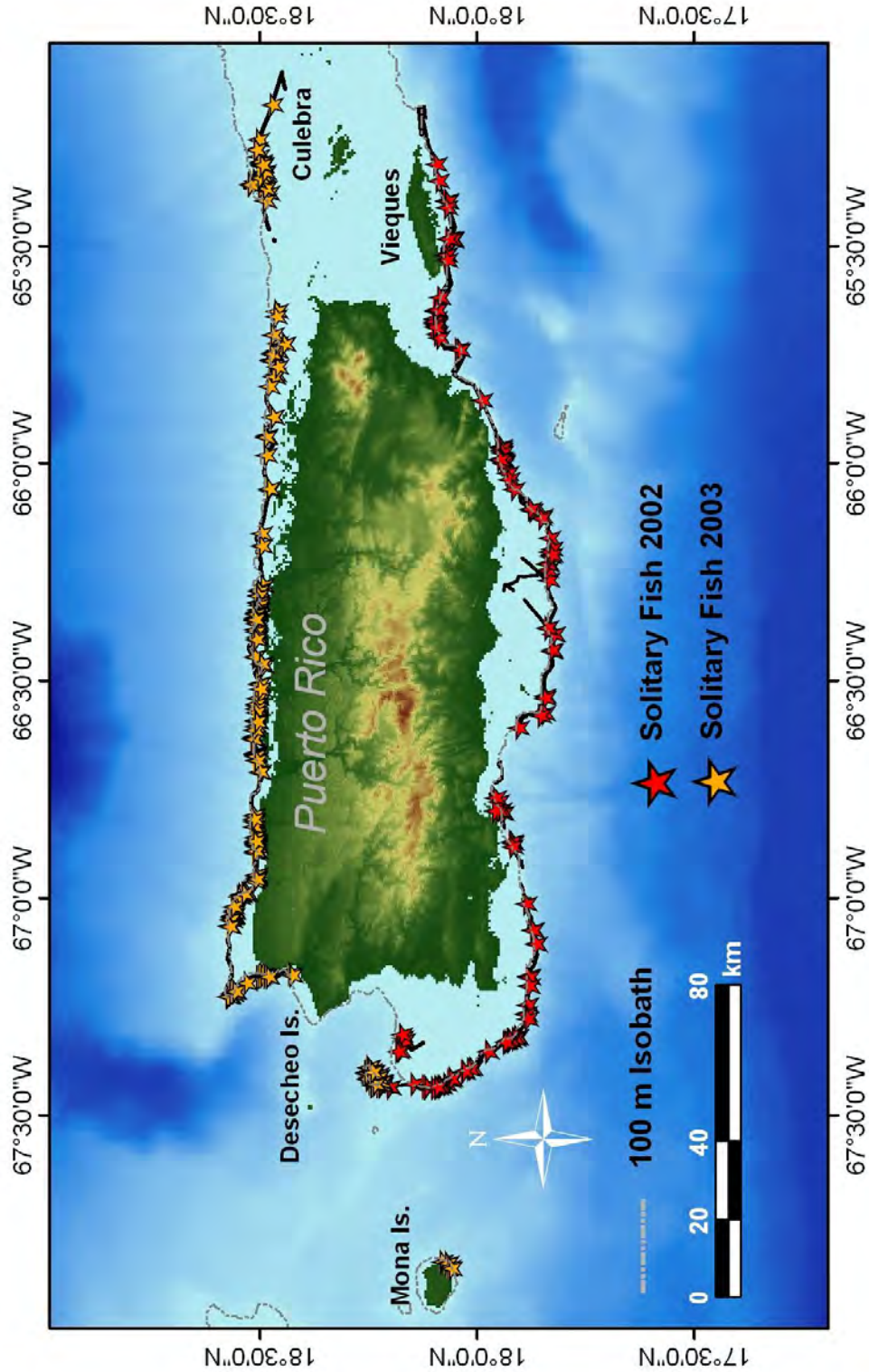
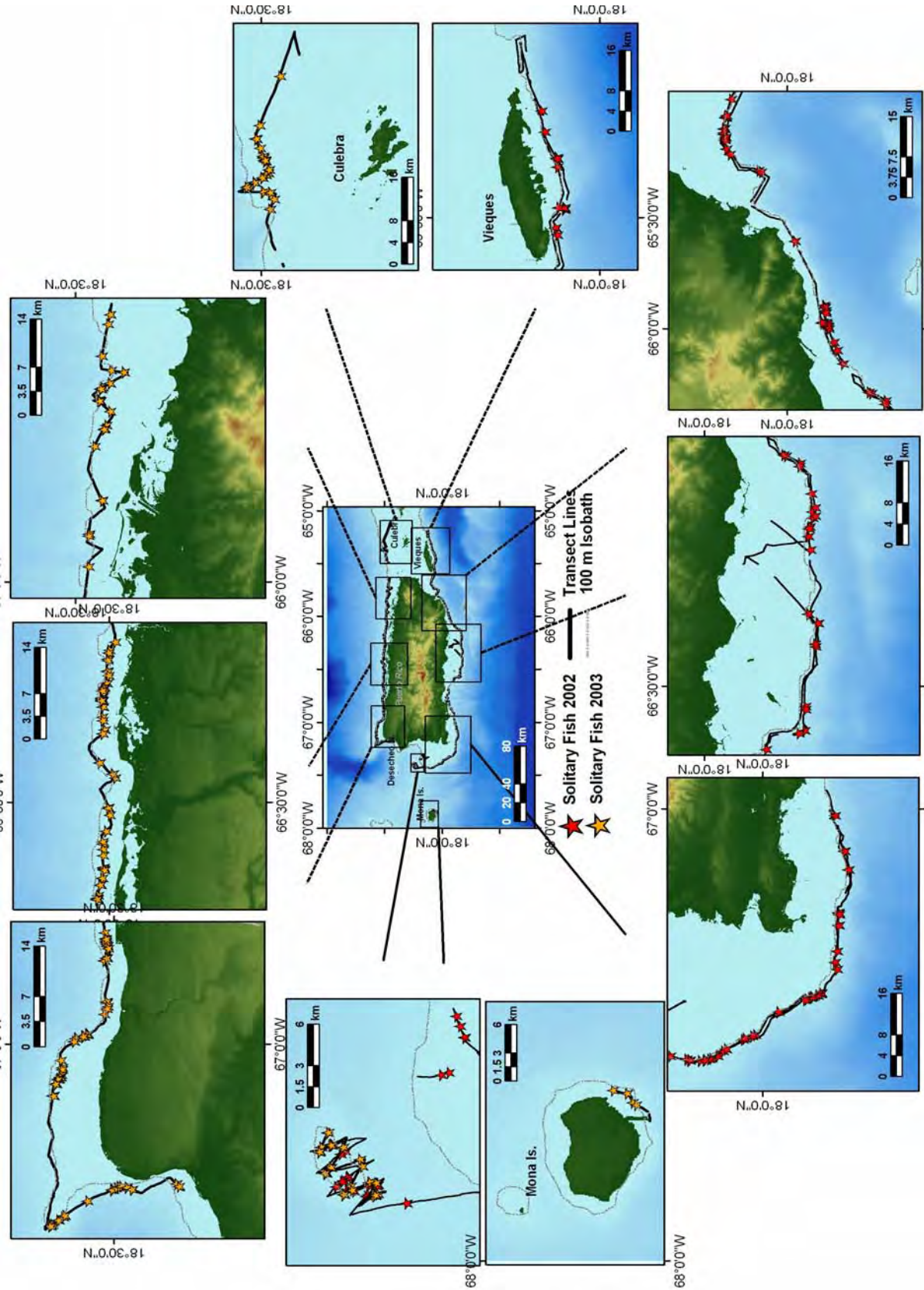


Figure 3. Overall distribution of solitary targets manually tracked from files collected during 2002 and 2003 surveys. Color of star indicates the year of the survey. The black line shows the complete transect lines for each year's survey.

Figure 4 (Following Page). Close-up view of locations along transects of individual large targets (red stars) for each of the regions as identified during the 2002 and 2003 surveys. Coarse-scale bathymetric grid (blue shading) is in the background showing general bathymetric patterns in the regions.



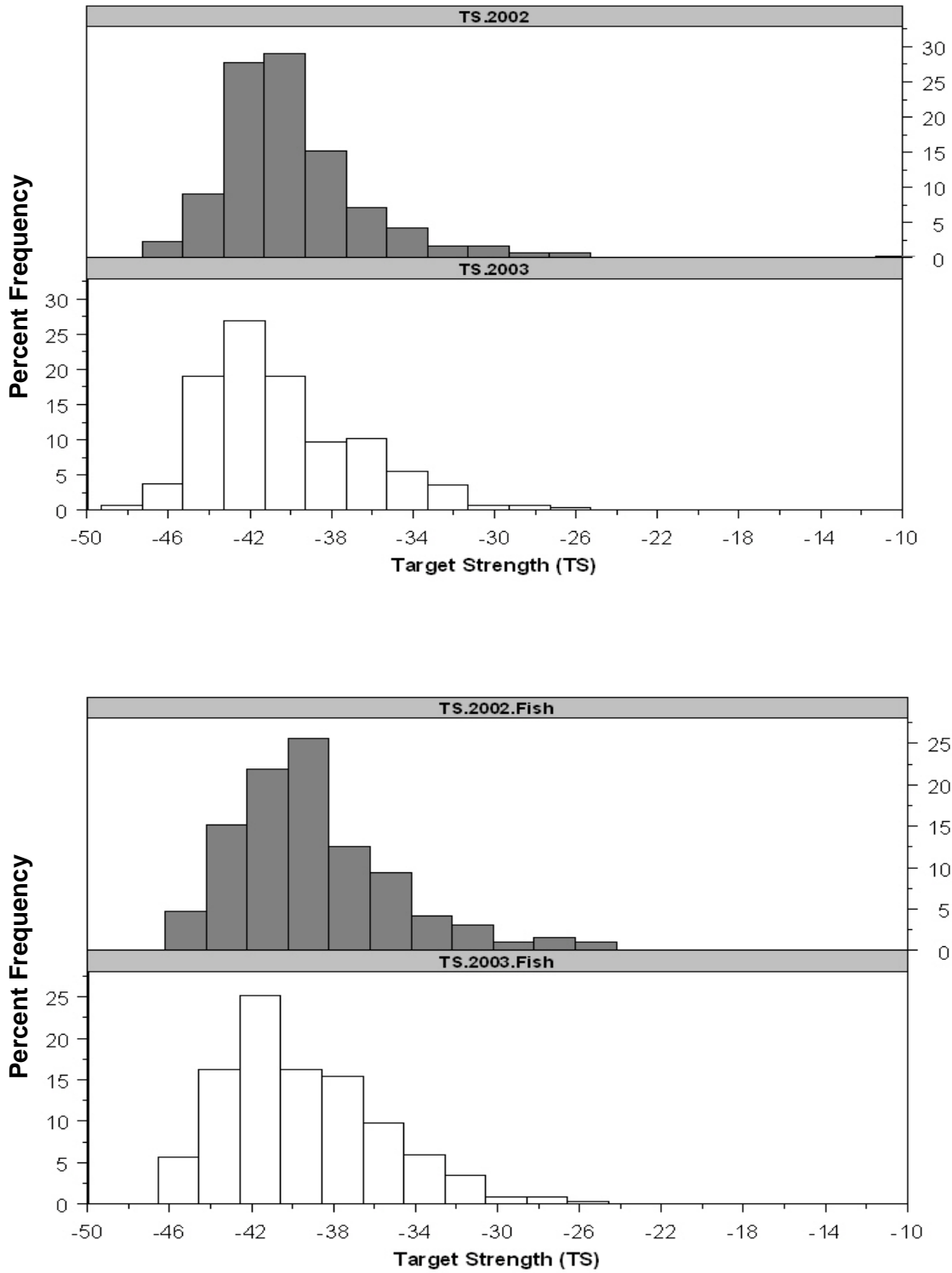


Figure 5. Distribution of acoustic target strengths for 2002 and 2003 surveys for (a) all fish including both solitary and aggregations, and (b) only the newly identified solitary fish targets.

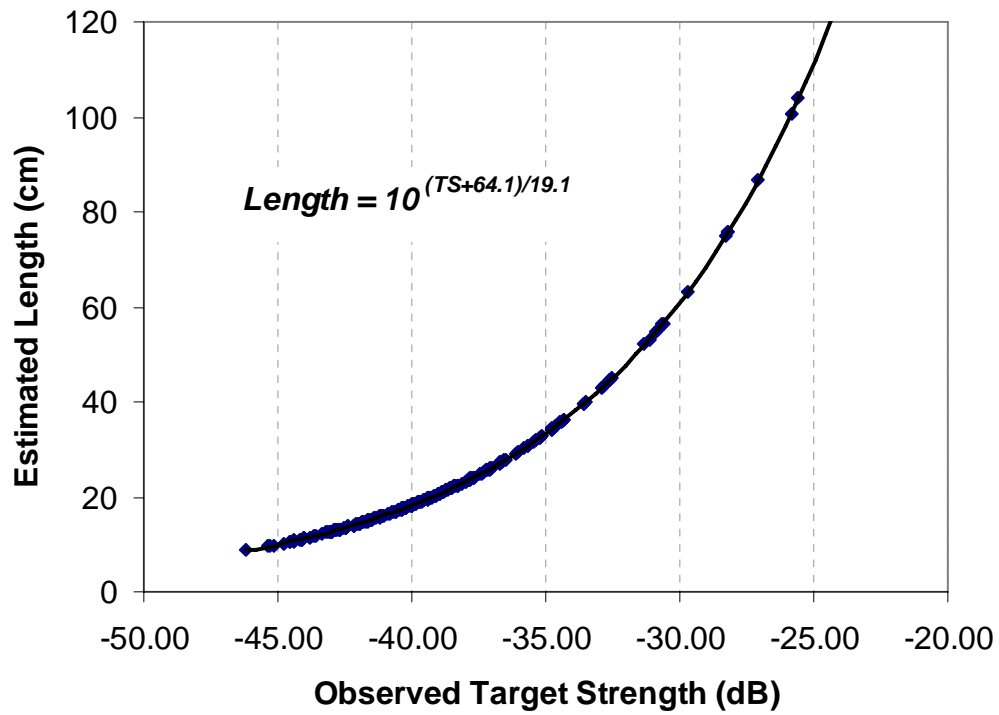


Figure 6. Generalized target strength to fish length relationship as used in HTI (2004). Conversions of acoustic size to fish size are only rough estimates to be used for general comparisons as several biological and physical factors contribute to a species' TS-Size relationship.

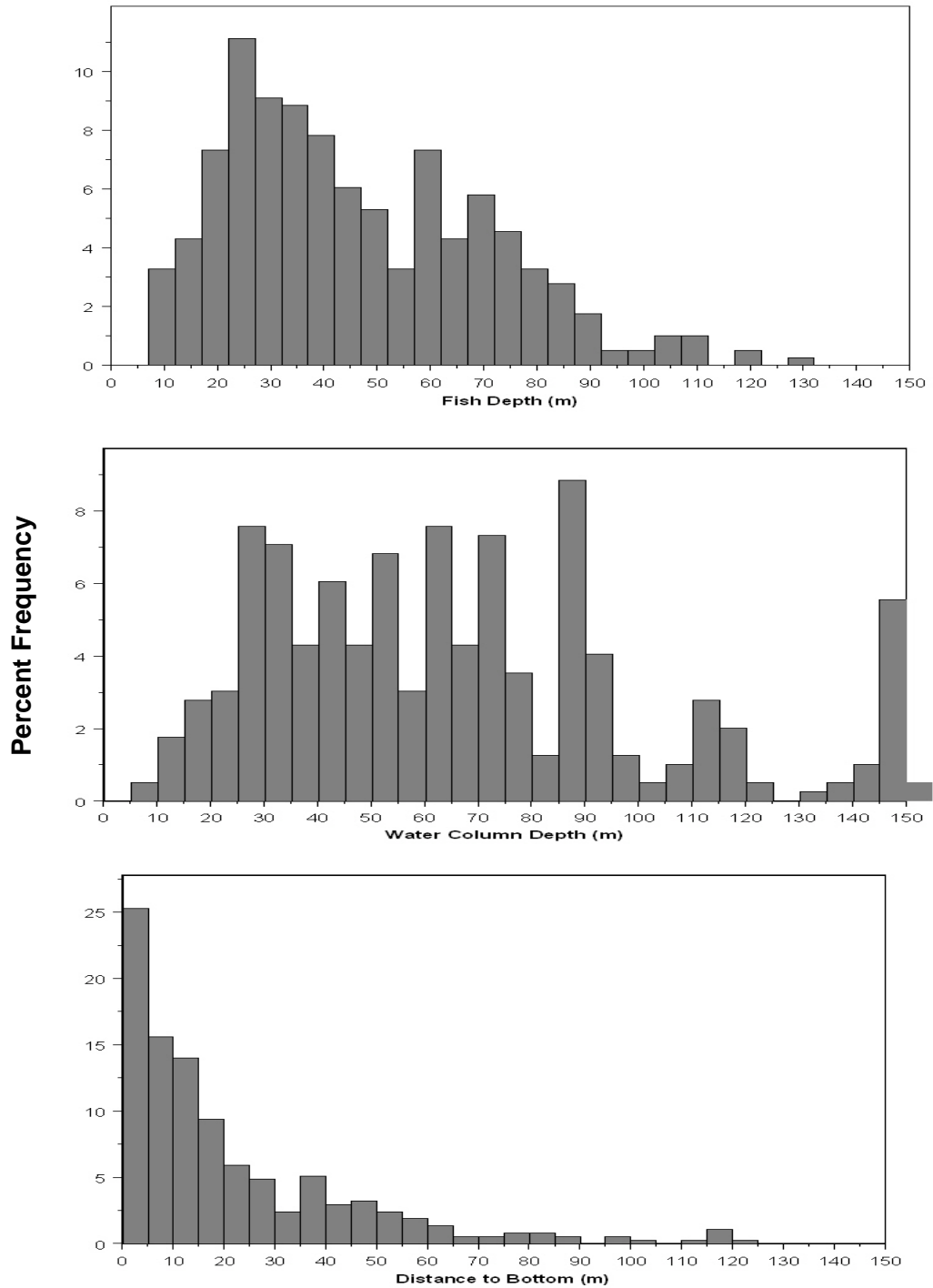


Figure 7. 2002 percent frequency distribution of (a) fish depth, (b) water column depth where fish were located and (c) distance between each fish and the bottom.

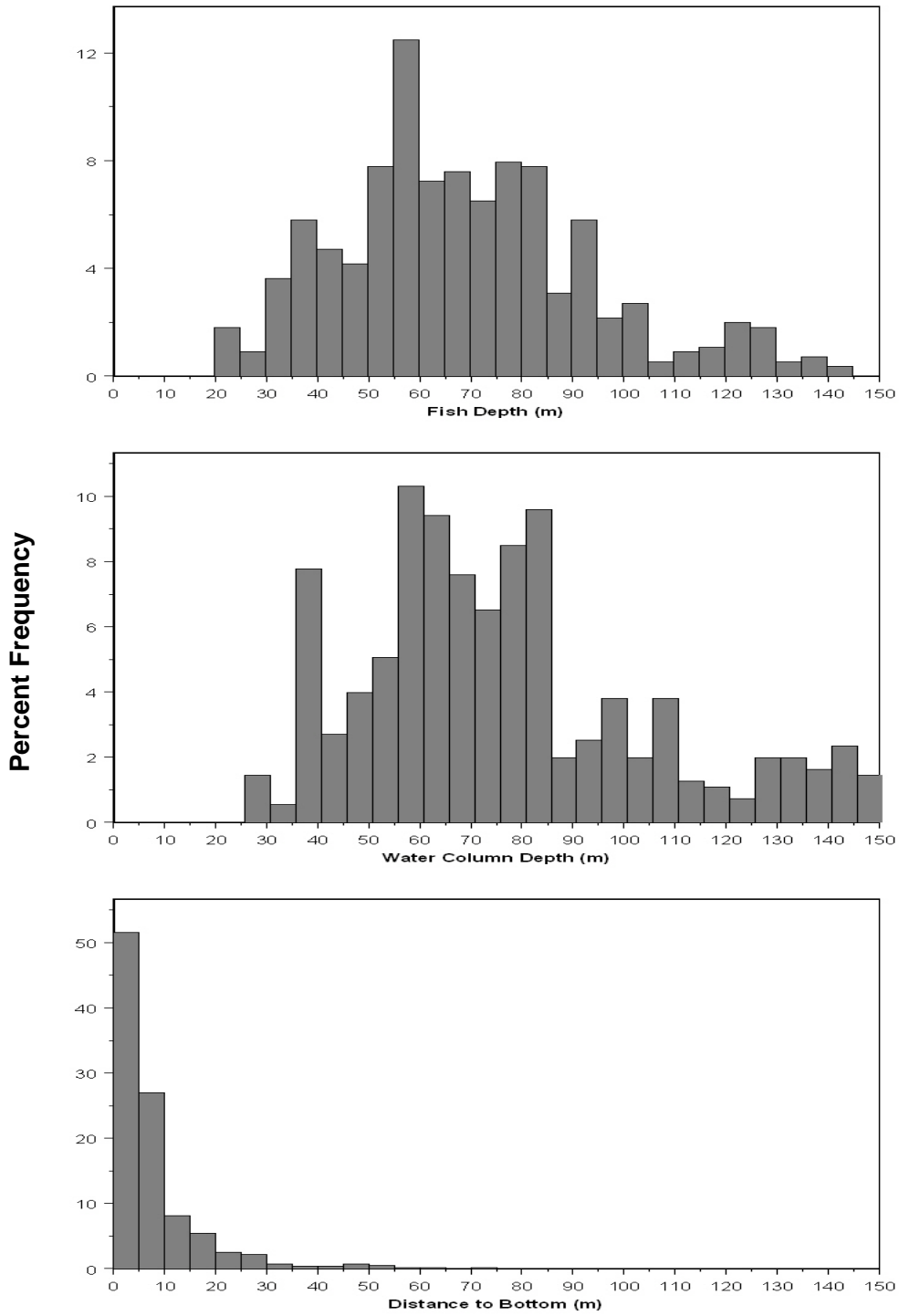


Figure 8. 2003 percent frequency distribution of (a) fish target depth, (b) water column depth under fish, and (c) distance of fish to bottom.

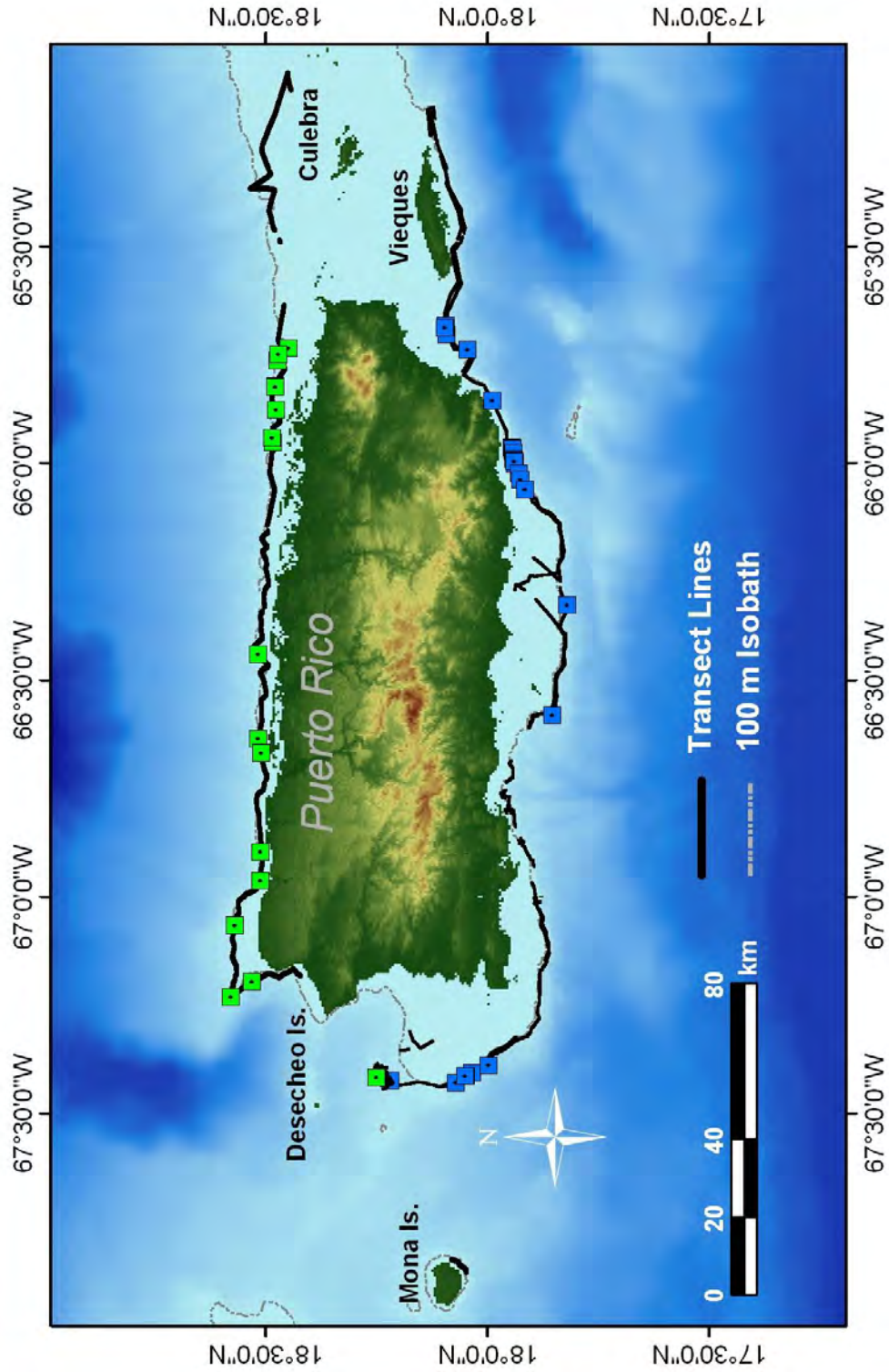


Figure 9. Distribution of fish targets that were identified over deep water (>>100 m) during 2002 (Blue) and 2003 (Green) surveys.

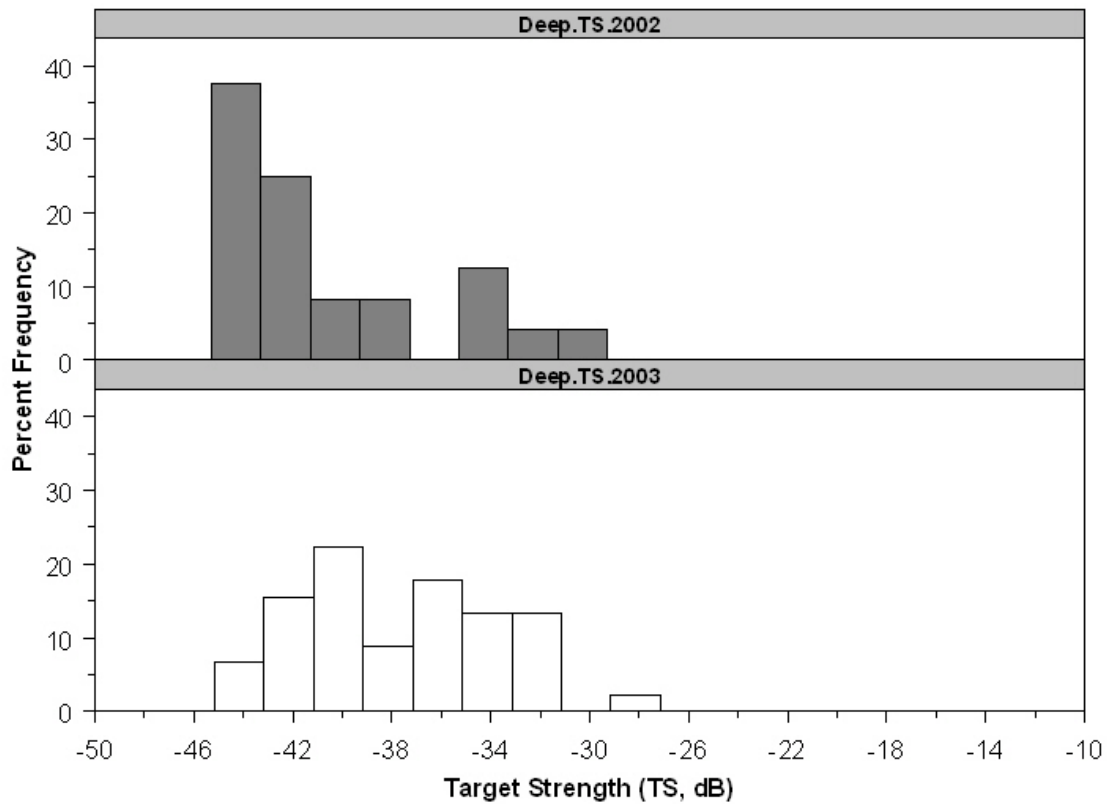


Figure 10. Percent frequency distribution of target strengths for fish observed over deep water (>>100 m) from surveys conducted in 2002 (top) and 2003 (bottom). Rough estimates of fish sizes can be determined using Figure 6.

Appendix A. (Page 1 of 4) Individual fish location and sizes during the 2002 Survey.

Original File	Fish #	Latitude (dd)	Longitude (dd)	Echo Count	TS (dB)	Water Depth (m)	Dist. from Surf (m)	Dist. off Bot. (m)	Length (cm)
A0591216	1	18.17099	-67.32140	10	-34.75	33.02	18.13	14.89	34
A0591216	4	18.16827	-67.32866	5	-39.87	28.53	26.02	2.51	19
A0591216	5	18.16834	-67.32850	4	-39.09	28.53	26.28	2.25	20
A0591216	6	18.17302	-67.31477	3	-42.73	51.83	45.05	6.78	13
A0591313	9	18.17758	-67.35122	8	-38.71	40.09	24.81	15.28	21
A0591313	10	18.18199	-67.35285	5	-38.80	63.33	48.00	15.33	21
A0591438	15	18.24614	-67.39795	4	-35.69	72.44	67.72	4.72	31
A0591438	16	18.24613	-67.39795	3	-36.74	72.44	70.52	1.92	27
A0591438	17	18.24614	-67.39796	4	-35.49	72.44	70.11	2.33	31
A0591438	18	18.24723	-67.39824	5	-42.48	74.47	66.53	7.94	14
A0591438	19	18.24637	-67.39809	4	-41.16	72.44	69.59	2.85	16
A0591438	20	18.24565	-67.39779	5	-40.83	73.82	68.16	5.66	17
A0591507	31	18.23832	-67.40204	4	-40.35	73.68	72.28	1.40	18
A0591507	32	18.24103	-67.40383	4	-40.41	72.67	69.33	3.34	17
A0591605	54	18.23669	-67.41865	4	-34.81	56.20	51.11	5.09	34
A0591605	55	18.23644	-67.41849	6	-41.58	56.71	53.25	3.46	15
A0591605	56	18.23692	-67.41888	5	-40.49	56.20	54.38	1.82	17
A0591605	57	18.23944	-67.42084	4	-42.06	61.97	59.06	2.91	14
A0591605	58	18.24020	-67.42165	4	-40.61	66.45	62.05	4.40	17
A0591605	59	18.24376	-67.42484	4	-40.29	97.84	80.36	17.48	18
A0591632	62	18.23739	-67.42680	5	-41.32	64.85	62.00	2.85	16
A0591700	66	18.23310	-67.42794	4	-42.68	49.48	43.22	6.26	13
A0591700	67	18.22475	-67.42430	3	-41.13	30.06	27.14	2.92	16
A0591700	68	18.22475	-67.42430	3	-39.52	30.06	27.86	2.20	19
A0591718	73	18.21939	-67.42389	5	-29.74	94.68	76.78	17.90	63
A0591718	74	18.21925	-67.42372	4	-30.65	94.68	79.52	15.16	56
A0591718	75	18.21948	-67.42399	5	-37.67	94.68	76.53	18.15	24
A0591718	76	18.21992	-67.42461	3	-30.63	61.34	66.36	-5.02	57
A0591718	77	18.22579	-67.43106	5	-38.89	55.13	42.22	12.91	21
A0591718	78	18.22495	-67.43017	4	-40.71	55.13	48.27	6.86	17
A0591741	79	18.20227	-67.43552	8	-37.67	118.95	82.33	36.62	24
A0591741	80	18.20226	-67.43552	6	-38.97	118.95	80.30	38.65	21
A0591741	81	18.20227	-67.43552	7	-39.52	118.95	80.20	38.75	19
A0591842	82	18.14661	-67.42842	3	-44.13	60.57	59.27	1.30	11
A0591915	85	18.12115	-67.43395	4	-32.93	41.80	34.34	7.46	43
A0591915	86	18.12121	-67.43389	3	-38.39	41.80	29.22	12.58	22
A0591915	87	18.11755	-67.43525	3	-34.31	51.60	37.25	14.35	36
A0591915	88	18.11613	-67.43567	8	-40.71	51.81	50.33	1.48	17
A0591915	89	18.11611	-67.43567	3	-34.45	51.81	49.42	2.39	36
A0591915	90	18.11607	-67.43567	3	-35.18	51.81	50.64	1.17	33
A0591946	91	18.10006	-67.43616	3	-37.90	44.92	31.34	13.58	24
A0600929	7	18.07246	-67.42853	5	-32.53	130.85	92.19	38.66	45
A0600929	8	18.06365	-67.41936	3	-36.09	61.42	26.08	35.34	29
A0601251	16	17.97606	-67.35172	3	-45.34	17.57	18.59	-1.02	10
A0601251	17	17.97609	-67.35172	3	-42.19	17.57	15.44	2.13	14
A0601340	18	18.01261	-67.39181	3	-44.14	16.22	18.52	-2.30	11
A0601340	19	18.01735	-67.39365	4	-43.80	18.26	15.67	2.59	12
A0601352	21	18.03226	-67.39955	8	-38.54	28.08	27.45	0.63	22
A0601352	22	18.02980	-67.39754	3	-37.41	18.01	15.52	2.49	25
A0601419	25	18.05903	-67.41652	6	-37.18	43.02	31.25	11.77	26
A0601419	26	18.05873	-67.41631	3	-43.17	47.83	33.06	14.77	12
A0601419	27	18.05868	-67.41626	3	-39.96	47.83	33.36	14.47	18
A0601445	31	18.08181	-67.43233	3	-42.86	79.93	36.09	43.84	13
A0601445	32	18.08570	-67.43348	4	-39.15	54.94	40.34	14.60	20
A0601445	33	18.09123	-67.43484	3	-33.53	43.05	38.81	4.24	40
A0601445	34	18.09259	-67.43565	5	-41.66	52.23	48.45	3.78	15
B0581503	1	18.09631	-65.66657	4	-37.11	92.65	16.52	76.13	26

Appendix A. (Page 2 of 4) Individual fish location and sizes during the 2002 Survey.

Original File	Fish #	Latitude (dd)	Longitude (dd)	Echo Count	TS (dB)	Water Depth (m)	Dist. from Surf (m)	Dist. off Bot. (m)	Length (cm)
B0581503	2	18.09636	-65.66668	3	-39.34	92.65	19.97	72.68	20
B0581503	3	18.09644	-65.66683	3	-40.33	92.65	22.23	70.42	18
B0581503	4	18.09665	-65.66731	3	-40.00	92.65	37.13	55.52	18
B0581503	5	18.09665	-65.66725	5	-41.13	92.65	36.78	55.87	16
B0581503	6	18.09323	-65.70099	4	-38.67	154.13	33.55	120.58	21
B0581503	7	18.09333	-65.70084	3	-39.25	154.13	34.61	119.52	20
B0581503	8	18.08779	-65.70948	3	-33.62	114.66	25.94	88.72	39
B0581900	18	17.94533	-65.96080	4	-42.44	149.12	101.14	47.98	14
B0581900	19	17.94492	-65.96276	4	-44.40	149.12	67.61	81.51	11
B0581900	20	17.94340	-65.96978	5	-44.00	149.10	63.17	85.93	11
B0581900	21	17.94341	-65.96974	6	-45.12	149.10	71.53	77.57	10
B0581900	22	17.94332	-65.97034	4	-42.45	149.10	105.22	43.88	14
B0581900	23	17.94435	-65.96503	4	-43.68	149.11	87.14	61.97	12
B0581900	24	17.94277	-65.97414	6	-42.02	149.13	82.13	67.00	14
B0581900	25	17.94170	-65.98933	9	-44.02	149.10	107.50	41.60	11
B0581900	26	17.94092	-65.99188	7	-44.58	149.11	121.41	27.70	11
B0581900	27	17.93936	-65.99639	7	-45.29	149.11	102.08	47.03	10
B0581900	28	17.93921	-65.99684	7	-41.07	149.11	109.94	39.17	16
B0581900	29	17.93808	-66.00023	4	-34.31	149.12	70.95	78.17	36
B0581900	30	17.94002	-65.99472	7	-42.98	149.10	128.38	20.72	13
B0581900	31	17.93031	-66.02273	4	-34.65	147.99	104.22	43.77	35
B0581900	32	17.92565	-66.03598	8	-43.04	149.24	98.61	50.63	13
B0581900	33	17.91660	-66.05822	7	-42.39	149.23	103.89	45.34	14
B0582008	36	17.94812	-65.98921	3	-41.87	25.35	13.20	12.15	15
B0582008	36	17.94812	-65.98921	5	-39.57	25.35	13.20	12.15	19
B0582008	37	17.94772	-65.99079	6	-41.19	25.35	11.44	13.91	16
B0582008	37	17.94772	-65.99079	7	-40.37	25.35	11.44	13.91	17
B0582200	38	17.98970	-65.85423	7	-30.92	144.38	121.09	23.29	55
B0591026	1	18.05851	-65.48596	7	-38.28	94.56	69.50	25.06	22
B0591026	2	18.05820	-65.48487	6	-38.48	94.56	72.98	21.58	22
B0591026	3	18.05782	-65.48316	6	-37.97	85.70	75.27	10.43	23
B0591026	4	18.05832	-65.48544	3	-39.34	94.56	62.78	31.78	20
B0591026	5	18.05832	-65.48546	4	-37.29	94.56	65.17	29.39	25
B0591026	6	18.05832	-65.48547	9	-41.94	94.56	66.16	28.40	14
B0591026	7	18.05796	-65.48388	4	-34.81	85.70	73.05	12.65	34
B0591026	8	18.05782	-65.48314	5	-40.01	85.70	74.31	11.39	18
B0591026	9	18.05781	-65.48311	3	-38.74	85.70	73.77	11.93	21
B0591026	10	18.05789	-65.48357	5	-36.58	85.70	75.56	10.14	28
B0591100	19	18.06929	-65.39580	6	-39.40	119.69	85.30	34.39	20
B0591100	20	18.07016	-65.39428	5	-39.72	112.75	85.39	27.36	19
B0591100	21	18.07025	-65.39412	7	-35.66	112.75	88.67	24.08	31
B0591100	22	18.06923	-65.39593	4	-41.64	119.69	84.67	35.02	15
B0591100	23	18.07006	-65.39444	3	-38.96	112.75	88.03	24.72	21
B0591100	24	18.07030	-65.39394	3	-43.33	112.75	88.19	24.56	12
B0591100	25	18.06901	-65.39627	4	-44.12	119.69	84.78	34.91	11
B0591100	26	18.08890	-65.34854	4	-39.03	64.41	47.05	17.36	21
B0591214	27	18.09411	-65.31101	5	-39.35	110.45	87.61	22.84	20
B0591700	37	18.06915	-65.41034	4	-39.43	22.40	20.80	1.60	20
B0591843	38	18.06692	-65.48303	6	-41.21	25.38	9.23	16.15	16
B0591843	39	18.06692	-65.48303	5	-40.10	25.38	7.78	17.60	18
B0591843	40	18.06692	-65.48303	5	-39.85	25.38	8.38	17.00	19
B0591843	41	18.06692	-65.48303	4	-38.12	25.38	9.45	15.93	23
B0591843	42	18.06692	-65.48303	3	-39.94	25.38	8.20	17.18	18
B0600722	2	18.09755	-65.67638	3	-40.20	54.83	31.20	23.63	18
B0600722	3	18.09738	-65.67401	5	-38.56	55.02	33.34	21.68	22

Appendix A. (Page 3 of 4) Individual fish location and sizes during the 2002 Survey.

Original File	Fish #	Latitude (dd)	Longitude (dd)	Echo Count	TS (dB)	Water Depth (m)	Dist. from Surf (m)	Dist. off Bot. (m)	Length (cm)
B0600751	5	18.09439	-65.64874	4	-44.54	30.21	30.52	-0.31	11
B0600751	6	18.09426	-65.64851	4	-9.31	31.25	29.91	1.34	739
B0600751	7	18.09405	-65.64745	10	-9.28	31.25	29.94	1.31	742
B0600751	9	18.09317	-65.64472	6	-40.38	26.24	13.03	13.21	17
B0600801	12	18.08577	-65.61806	3	-43.20	27.42	19.22	8.20	12
B0601000	20	18.07187	-65.51909	4	-42.97	43.19	37.81	5.38	13
B0601000	21	18.07187	-65.51907	3	-36.71	43.19	37.13	6.06	27
B0601000	22	18.07192	-65.51859	4	-39.77	43.19	38.48	4.71	19
B0601000	23	18.06928	-65.53149	3	-36.46	66.84	41.56	25.28	28
B0601200	26	18.09499	-65.68326	5	-44.76	148.61	88.39	60.22	10
B0601200	27	18.09442	-65.68070	3	-39.76	148.60	87.14	61.47	19
B0601200	28	18.09547	-65.68570	4	-43.59	137.78	27.31	110.47	12
B0601200	29	18.04466	-65.73656	3	-28.18	144.12	93.84	50.28	76
B0601200	30	18.04053	-65.73914	5	-28.30	120.93	85.88	35.05	75
C0580700	5	17.88124	-67.18068	7	-37.44	59.85	50.56	9.29	25
C0580700	6	17.88121	-67.18076	6	-38.28	59.85	55.05	4.80	22
C0580700	7	17.88181	-67.17939	5	-40.22	37.51	34.39	3.12	18
C0580800	8	17.86541	-67.10515	7	-42.84	25.45	24.84	0.61	13
C0580800	9	17.86542	-67.10492	4	-39.38	25.45	23.83	1.62	20
C0580800	10	17.86542	-67.10492	7	-41.39	25.45	21.97	3.48	15
C0580913	13	17.88689	-67.01164	3	-28.20	19.52	11.63	7.89	76
C0590352	4	17.91813	-66.87228	7	-41.69	52.14	37.14	15.00	15
C0590400	6	17.92107	-66.87141	5	-40.63	52.00	33.63	18.37	17
C0590400	7	17.92107	-66.87141	4	-40.34	52.00	32.98	19.02	18
C0590400	8	17.92103	-66.87139	5	-39.72	52.00	30.95	21.05	19
C0590522	10	17.93962	-66.80397	7	-44.15	13.68	21.19	-7.51	11
C0590522	11	17.94637	-66.79726	4	-44.42	11.83	18.00	-6.17	11
C0590543	12	17.95005	-66.79908	3	-42.90	30.47	32.45	-1.98	13
C0590601	14	17.95130	-66.77742	5	-32.83	14.37	47.39	-33.02	43
C0590608	15	17.95809	-66.76825	6	-38.88	12.50	7.06	5.44	21
C0591134	20	17.95885	-66.79881	6	-35.35	17.01	18.41	-1.40	32
C0591150	21	17.91977	-66.88141	4	-33.58	10.16	20.63	-10.47	40
C0600234	1	17.87216	-67.07292	6	-39.11	41.00	21.30	19.70	20
C0600234	2	17.87198	-67.07315	4	-41.13	37.26	18.80	18.46	16
C0600407	12	17.88053	-67.18300	3	-31.16	85.92	72.53	13.39	53
C0600423	14	17.88097	-67.20106	7	-32.62	85.62	42.14	43.48	44
C0600423	15	17.88097	-67.20152	7	-40.12	85.62	25.38	60.24	18
C0600500	20	17.88386	-67.24611	6	-35.81	85.92	79.63	6.29	30
C0600500	21	17.88390	-67.24623	8	-41.13	85.92	80.50	5.42	16
C0600500	22	17.88707	-67.26575	7	-37.82	71.66	30.78	40.88	24
C0600500	23	17.88712	-67.26591	3	-42.98	71.66	29.81	41.85	13
C0600523	25	17.88372	-67.27760	3	-38.56	85.91	41.05	44.86	22
C0600600	29	17.90903	-67.31921	5	-37.86	85.93	48.75	37.18	24
C0600600	30	17.90903	-67.31925	5	-37.10	85.93	49.09	36.84	26
C0600600	31	17.90908	-67.31979	3	-40.93	85.93	56.59	29.34	16
C0600600	32	17.90889	-67.31893	7	-38.01	85.93	48.06	37.87	23
C0600600	33	17.90895	-67.31900	4	-31.32	85.93	74.81	11.12	52
C0600600	34	17.90943	-67.32080	4	-39.90	85.94	61.41	24.53	18
C0600600	35	17.90898	-67.31904	8	-30.84	85.93	82.28	3.65	55
C0600611	36	17.91405	-67.32288	9	-41.68	62.08	84.28	-22.20	15
C0600611	38	17.91477	-67.32297	7	-40.45	62.08	38.91	23.17	17
C0600611	39	17.92399	-67.32622	9	-41.97	81.25	35.30	45.95	14
C0600611	40	17.92641	-67.32708	7	-41.49	75.08	32.83	42.25	15
C0600611	42	17.92226	-67.32577	4	-38.41	69.96	26.08	43.88	22
C0600611	43	17.92421	-67.32631	9	-39.98	81.25	32.72	48.53	18
C0600611	45	17.93133	-67.32979	6	-37.24	85.91	32.94	52.97	25
C0600611	46	17.93459	-67.33077	8	-38.70	32.04	18.20	13.84	21

Appendix A. (Page 4 of 4) Individual fish location and sizes during the 2002 Survey.

Original File	Fish #	Latitude (dd)	Longitude (dd)	Echo Count	TS (dB)	Water Depth (m)	Dist. from Surf (m)	Dist. off Bot. (m)	Length (cm)
D0590933	7	17.83548	-66.26746	9	-42.68	72.68	37.34	35.34	13
D0590933	8	17.83897	-66.24467	4	-39.39	46.13	41.38	4.75	20
D0591000	9	17.83690	-66.22828	5	-42.16	31.27	23.45	7.82	14
D0591000	10	17.83819	-66.23149	4	-41.49	31.37	17.33	14.04	15
D0591000	11	17.83825	-66.23164	5	-37.81	31.37	23.50	7.87	24
D0591008	17	17.83228	-66.21318	8	-32.60	44.05	22.42	21.63	45
D0591008	18	17.83270	-66.20254	5	-34.41	39.05	28.19	10.86	36
D0591008	20	17.83385	-66.17175	5	-46.21	30.41	28.53	1.88	9
D0591127	32	17.85167	-66.12003	6	-42.56	28.46	21.50	6.96	13
D0591151	36	17.87368	-66.10745	8	-37.01	55.08	30.47	24.61	26
D0591151	37	17.87775	-66.10548	9	-35.26	60.53	24.56	35.97	32
D0591300	43	17.85269	-66.12531	6	-35.19	39.49	29.30	10.19	33
D0591400	48	17.82815	-66.19532	10	-42.17	40.64	40.42	0.22	14
D0591400	50	17.82825	-66.20980	4	-39.64	34.82	18.41	16.41	19
D0600856	5	17.82389	-66.39277	5	-41.78	72.39	24.47	47.92	15
D0600856	6	17.82408	-66.39273	4	-41.16	72.39	26.69	45.70	16
D0600856	7	17.82374	-66.39278	5	-36.63	72.39	25.48	46.91	27
D0601046	13	17.84303	-66.53425	4	-42.69	91.55	59.08	32.47	13
D0601046	14	17.84308	-66.53907	5	-43.03	114.61	57.31	57.30	13
D0601046	15	17.84488	-66.57510	5	-36.62	76.08	32.14	43.94	27
D0601046	16	17.85416	-66.57995	4	-34.63	137.70	110.42	27.28	35
D0601209	20	17.90457	-66.60739	5	-38.42	14.70	10.66	4.04	22
D0601452	25	17.82770	-66.43288	5	-36.08	45.30	19.55	25.75	29
D0601452	26	17.82792	-66.42831	4	-37.74	41.33	29.59	11.74	24
D0601452	27	17.83903	-66.37720	3	-25.84	34.21	28.45	5.76	101
D0601452	28	17.83903	-66.37720	4	-25.57	34.21	31.03	3.18	104
D0601452	29	17.83906	-66.37716	6	-27.07	34.21	29.84	4.37	87

Appendix B. (Page 1 of 7) Individual fish location and sizes during the 2003 Survey.

Original File	Fish #	Latitude (dd)	Longitude (dd)	Echo Count	TS (dB)	Water Depth (m)	Dist. from Surf (m)	Dist. off Bot. (m)	Length (cm)
Mf0781536	5	18.48087	-65.37738	5	-37.71	39.56	37.39	2.17	24
Mf0781536	6	18.48088	-65.37740	3	-41.69	39.56	37.53	2.03	15
Mf0781536	7	18.48658	-65.39408	5	-37.54	71.45	67.91	3.54	25
Mf0781536	8	18.48658	-65.39406	7	-41.80	71.45	67.38	4.07	15
Mf0781500	2	18.49847	-65.36533	5	-42.48	59.21	56.38	2.83	14
Mf0781500	3	18.49841	-65.36533	4	-41.20	59.21	56.13	3.08	16
Mf0781500	4	18.49839	-65.36534	3	-40.43	59.21	55.33	3.88	17
Mf0781500	5	18.49723	-65.36543	5	-38.52	59.87	55.31	4.56	22
Mf0781500	6	18.49724	-65.36543	7	-36.88	59.87	55.69	4.18	27
Mf0781500	7	18.48725	-65.36658	5	-39.83	42.16	40.08	2.08	19
Mf0781500	8	18.48720	-65.36659	3	-40.58	42.16	41.67	0.49	17
Mf0781500	9	18.48720	-65.36659	3	-40.24	42.16	42.11	0.05	18
Mf0781427	1	18.51038	-65.34936	6	-35.64	60.99	57.81	3.18	31
Mf0781427	2	18.51038	-65.34937	6	-36.06	60.99	59.09	1.90	29
Mf0781427	3	18.51041	-65.34938	3	-32.93	60.99	59.41	1.58	43
Mf0781427	4	18.51051	-65.34948	3	-36.68	60.99	56.23	4.76	27
Mf0781427	5	18.51059	-65.34954	3	-40.56	61.11	55.55	5.56	17
Mf0781427	6	18.51059	-65.34955	3	-41.05	61.11	56.00	5.11	16
Mf0781427	7	18.51979	-65.35564	5	-36.75	83.09	76.80	6.29	27
Mf0781427	8	18.52269	-65.35736	4	-39.92	109.19	92.30	16.89	18
Mf0781427	9	18.52283	-65.35746	4	-43.99	109.19	91.22	17.97	11
Mf0781414	2	18.49000	-65.33411	5	-35.70	38.10	35.92	2.18	31
Mf0781414	3	18.48995	-65.33408	4	-40.58	38.10	36.44	1.66	17
Mf0781414	4	18.49005	-65.33414	4	-40.50	38.10	35.45	2.65	17
Mf0781414	5	18.49328	-65.33698	4	-40.44	43.13	39.89	3.24	17
Mf0781414	6	18.49341	-65.33710	3	-40.75	43.13	41.50	1.63	17
Mf0781414	7	18.49860	-65.34129	4	-40.60	43.42	36.47	6.95	17
Mf0781414	8	18.49874	-65.34142	5	-35.24	43.42	42.11	1.31	32
Mf0781408	4	18.48869	-65.32836	8	-41.01	38.87	36.47	2.40	16
Mf0781408	5	18.48883	-65.32809	6	-40.68	38.87	34.36	4.51	17
Mf0781408	6	18.48874	-65.32826	4	-38.27	38.87	34.06	4.81	23
Mf0781400	1	18.49423	-65.31449	4	-41.67	33.25	27.80	5.45	15
Mf0781400	2	18.49447	-65.31377	3	-46.27	33.25	29.09	4.16	9
Mf0781334	4	18.50248	-65.29266	3	-40.26	47.54	42.61	4.93	18
Mf0781334	5	18.49687	-65.30856	3	-32.49	40.46	27.94	12.52	45
Mf0781334	6	18.49697	-65.30834	3	-30.12	40.46	31.73	8.73	60
Mf0781334	7	18.49697	-65.30834	7	-36.43	40.46	24.75	15.71	28
Mf0781334	8	18.49799	-65.30573	4	-41.72	45.13	39.78	5.35	15
Mf0781334	9	18.49780	-65.30604	4	-40.98	42.19	42.02	0.17	16
Mf0781334	10	18.49495	-65.31270	7	-37.25	25.73	21.09	4.64	25
Mf0781334	11	18.49502	-65.31251	6	-41.61	25.73	21.47	4.26	15
Mf0781334	12	18.49510	-65.31232	6	-40.26	25.73	22.97	2.76	18
Mf0781334	13	18.49507	-65.31241	5	-37.69	25.73	23.50	2.23	24
Mf0781334	14	18.49519	-65.31202	3	-34.98	25.73	20.73	5.00	33
Mf0781334	15	18.49477	-65.31303	6	-38.28	25.73	19.77	5.96	22
Mf0781334	16	18.49468	-65.31320	3	-41.51	25.73	21.77	3.96	15
Mf0781301	3	18.50269	-65.25504	5	-33.61	52.03	49.33	2.70	39
Mf0781301	4	18.50822	-65.27722	5	-32.89	39.91	34.48	5.43	43
Mf0781301	5	18.50822	-65.27710	4	-38.71	39.91	35.84	4.07	21
Mf0781301	6	18.50825	-65.27681	6	-42.04	39.91	38.38	1.53	14
Mf0781301	7	18.50824	-65.27685	7	-37.82	39.91	37.41	2.50	24
Mf0781301	8	18.50822	-65.27700	4	-32.90	39.91	36.92	2.99	43
Mf0781301	9	18.50822	-65.27715	4	-35.40	39.91	33.81	6.10	32
Mf0781301	10	18.50822	-65.27711	4	-37.22	39.91	34.44	5.47	26
Mf0781301	11	18.50823	-65.27695	10	-36.85	39.91	37.08	2.83	27
Mf0781301	12	18.50823	-65.27694	5	-39.97	39.91	37.61	2.30	18
Mf0781217	1	18.47187	-65.17344	10	-32.13	40.50	33.34	7.16	47

Appendix B. (Page 2 of 7) Individual fish location and sizes during the 2003 Survey.

Original File	Fish #	Latitude (dd)	Longitude (dd)	Echo Count	TS (dB)	Water Depth (m)	Dist. from Surf (m)	Dist. off Bot. (m)	Length (cm)
Mf0791332	1	18.47831	-66.05992	7	-41.94	49.79	45.47	4.32	14
Mf0791304	2	18.47924	-66.05676	3	-42.25	54.46	48.59	5.87	14
Mf0791232	2	18.48564	-65.97977	3	-37.00	81.17	75.88	5.29	26
Mf0791142	1	18.48526	-65.93684	10	-31.47	85.22	80.06	5.16	51
Mf0791142	2	18.48526	-65.93683	8	-38.48	85.22	79.83	5.39	22
Mf0791142	3	18.48527	-65.93689	7	-32.40	85.22	78.80	6.42	46
Mf0791142	4	18.48587	-65.93953	5	-32.30	129.71	114.98	14.73	46
Mf0791100	3	18.46991	-65.89280	4	-33.78	41.01	33.67	7.34	39
Mf0791100	4	18.46976	-65.89319	4	-31.78	40.69	37.39	3.30	49
Mf0791100	5	18.46972	-65.89332	7	-35.28	40.69	36.58	4.11	32
Mf0791000	3	18.46434	-65.79454	4	-37.23	37.72	33.22	4.50	26
Mf0791000	4	18.46675	-65.79895	4	-39.31	49.81	22.89	26.92	20
Mf0791000	5	18.46742	-65.79975	5	-26.56	52.70	43.39	9.31	92
Mf0791000	6	18.47856	-65.82192	6	-34.20	126.43	135.77	-9.34	37
Mf0790927	1	18.47319	-65.76208	4	-35.98	98.56	104.78	-6.22	30
Mf0790927	2	18.47324	-65.76204	6	-34.45	98.56	106.19	-7.63	36
Mf0790927	3	18.47323	-65.76204	5	-31.03	98.56	106.38	-7.82	54
Mf0790927	4	18.47389	-65.76136	9	-40.07	126.77	122.70	4.07	18
Mf0790927	5	18.47387	-65.76138	4	-40.95	126.77	123.30	3.47	16
Mf0790927	6	18.47400	-65.76127	5	-45.15	126.77	126.77	0.00	10
Mf0790927	7	18.47384	-65.76141	3	-44.23	126.77	123.06	3.71	11
Mf0790927	8	18.47368	-65.76158	4	-41.51	126.77	117.09	9.68	15
Mf0790927	9	18.47235	-65.76294	4	-37.17	98.56	82.63	15.93	26
Mf0790927	10	18.47238	-65.76291	4	-37.03	98.56	82.84	15.72	26
Mf0790927	11	18.47235	-65.76294	3	-35.98	98.56	83.73	14.83	30
Mf0790927	12	18.47235	-65.76294	3	-39.61	98.56	84.17	14.39	19
Mf0790927	13	18.47228	-65.76302	4	-39.02	83.16	83.05	0.11	21
Mf0790927	14	18.47238	-65.76290	7	-36.08	98.56	84.25	14.31	29
Mf0790927	15	18.47240	-65.76286	3	-37.58	98.56	84.89	13.67	24
Mf0790927	16	18.45993	-65.77615	5	-33.96	40.23	34.00	6.23	38
Mf0790901	2	18.46055	-65.73950	4	-40.21	78.72	77.52	1.20	18
Mf0790901	3	18.46052	-65.73948	9	-37.83	78.72	76.67	2.05	24
Mf0790901	4	18.46051	-65.73947	6	-40.79	78.72	76.13	2.59	17
Mf0790901	5	18.46048	-65.73946	5	-36.75	78.72	76.16	2.56	27
Mf0790901	6	18.46041	-65.73943	3	-39.63	78.72	77.38	1.34	19
Mf0790901	7	18.46918	-65.74525	4	-39.75	110.01	103.55	6.46	19
Mf0790901	8	18.47126	-65.74683	6	-26.65	145.28	124.73	20.55	91
Mf0790901	9	18.47126	-65.74683	7	-35.44	145.28	121.56	23.72	32
Mf0790901	10	18.47135	-65.74690	7	-35.93	145.28	132.34	12.94	30
Mf0790901	11	18.47135	-65.74691	4	-34.41	145.28	139.95	5.33	36
Mf0790901	12	18.47133	-65.74688	3	-35.99	145.28	129.42	15.86	30
Mf0790901	13	18.47126	-65.74683	5	-32.35	145.28	121.13	24.15	46
Mf0790901	14	18.47135	-65.74690	7	-36.75	145.28	128.55	16.73	27
Mf0790901	15	18.47135	-65.74691	5	-33.76	145.28	127.13	18.15	39
Mf0790901	16	18.47137	-65.74692	5	-32.69	145.28	139.95	5.33	44
Mf0790901	17	18.47123	-65.74682	3	-36.19	145.28	135.48	9.80	29
Mf0790901	18	18.47128	-65.74685	3	-39.79	145.28	138.73	6.55	19
Mf0790901	19	18.47136	-65.74691	6	-34.63	145.28	135.97	9.31	35
Mf0790829	1	18.45903	-65.72233	6	-39.60	84.52	80.20	4.32	19
Mf0790829	2	18.44402	-65.72498	10	-39.85	79.79	68.80	10.99	19
Mf0790829	3	18.44399	-65.72498	5	-41.40	79.79	69.23	10.56	15
Mf0790829	4	18.44375	-65.72501	5	-36.96	79.79	54.84	24.95	26
Mf0790829	5	18.44370	-65.72501	3	-39.59	79.79	54.63	25.16	19
Mf0790800	2	18.46990	-65.70378	7	-38.41	101.42	89.88	11.54	22
Mf0790800	3	18.46990	-65.70379	4	-38.35	101.42	90.63	10.79	22
Mf0790725	1	18.46015	-65.64942	4	-34.33	54.57	51.97	2.60	36
Mf0790725	2	18.46015	-65.64942	7	-38.79	54.57	52.80	1.77	21

Appendix B. (Page 3 of 7) Individual fish location and sizes during the 2003 Survey.

Original File	Fish #	Latitude (dd)	Longitude (dd)	Echo Count	TS (dB)	Water Depth (m)	Dist. from Surf (m)	Dist. off Bot. (m)	Length (cm)
Mf0790725	3	18.46240	-65.66200	5	-28.99	65.89	52.64	13.25	69
Sf0780621	9	18.21912	-67.42960	6	-38.45	71.32	55.63	15.69	22
Sf0780621	10	18.21923	-67.42964	3	-36.68	71.32	56.48	14.84	27
Sf0780621	11	18.22116	-67.43053	8	-35.04	56.42	50.92	5.50	33
Sf0780621	12	18.22127	-67.43056	4	-35.27	56.42	51.03	5.39	32
Sf0780621	13	18.22141	-67.43065	4	-40.83	56.42	52.28	4.14	17
Sf0780621	14	18.22095	-67.43047	4	-36.50	56.42	50.20	6.22	28
Sf0780621	15	18.22085	-67.43044	4	-39.28	56.42	48.73	7.69	20
Sf0780621	16	18.22040	-67.43020	5	-35.28	55.12	44.36	10.76	32
Sf0780621	17	18.22066	-67.43036	3	-32.37	56.42	51.64	4.78	46
Sf0780600	14	18.22449	-67.42218	6	-39.39	36.97	33.66	3.31	20
Sf0780600	15	18.22396	-67.42195	5	-40.91	47.91	39.95	7.96	16
Sf0780600	16	18.22020	-67.42236	3	-35.59	72.41	72.75	-0.34	31
Sf0780600	17	18.22018	-67.42231	5	-40.52	72.41	73.80	-1.39	17
Sf0780600	18	18.22018	-67.42232	4	-40.48	72.41	73.20	-0.79	17
Sf0780500	64	18.24683	-67.41266	10	-36.78	73.47	71.14	2.33	27
Sf0780500	65	18.24678	-67.41261	6	-37.56	73.47	71.39	2.08	25
Sf0780500	66	18.24674	-67.41256	5	-41.48	73.47	71.28	2.19	15
Sf0780500	67	18.24952	-67.41594	3	-30.46	109.04	89.73	19.31	58
Sf0780500	68	18.24960	-67.41606	4	-25.34	109.04	91.22	17.82	107
Sf0780500	69	18.24969	-67.41612	4	-43.64	109.04	91.75	17.29	12
Sf0780500	70	18.24994	-67.41615	4	-27.83	127.36	92.75	34.61	79
Sf0780500	71	18.25002	-67.41616	3	-37.01	127.36	94.47	32.89	26
Sf0780500	72	18.25013	-67.41621	4	-31.84	127.36	103.16	24.20	49
Sf0780500	73	18.22958	-67.40739	9	-41.48	85.40	95.56	-10.16	15
Sf0780500	74	18.22966	-67.40740	4	-37.33	85.40	94.05	-8.65	25
Sf0780500	75	18.22971	-67.40739	5	-38.46	85.40	89.75	-4.35	22
Sf0780500	76	18.22844	-67.41172	5	-41.65	67.59	64.41	3.18	15
Sf0780500	77	18.22846	-67.41175	5	-40.60	67.59	65.34	2.25	17
Sf0780500	78	18.22840	-67.41166	5	-40.14	67.59	65.22	2.37	18
Sf0780500	79	18.23515	-67.42430	6	-40.31	55.19	52.20	2.99	18
Sf0780500	80	18.23943	-67.42990	5	-36.77	96.41	90.81	5.60	27
Sf0780500	81	18.23946	-67.42992	5	-37.62	96.41	94.39	2.02	24
Sf0780500	82	18.23950	-67.42995	7	-37.14	96.41	91.72	4.69	26
Sf0780500	83	18.23912	-67.42992	5	-40.96	79.23	88.72	-9.49	16
Sf0780500	84	18.23914	-67.42992	4	-35.21	79.23	85.34	-6.11	33
Sf0780500	85	18.23915	-67.42992	4	-40.59	79.23	88.69	-9.46	17
Sf0780500	86	18.23934	-67.42996	4	-35.72	111.88	92.08	19.80	31
Sf0780500	87	18.23423	-67.42713	5	-35.32	53.64	46.20	7.44	32
Sf0780500	88	18.23426	-67.42715	4	-35.92	53.64	48.33	5.31	30
Sf0780415	8	18.24845	-67.39016	6	-39.11	104.67	102.81	1.86	20
Sf0780415	9	18.24836	-67.38999	7	-40.76	104.67	99.44	5.23	17
Sf0780415	10	18.24837	-67.39000	3	-36.82	104.67	99.38	5.29	27
Sf0780415	11	18.24838	-67.39002	4	-39.46	104.67	102.13	2.54	20
Sf0780415	12	18.24837	-67.39000	3	-38.85	104.67	102.05	2.62	21
Sf0780415	13	18.24837	-67.39000	4	-39.81	104.67	97.80	6.87	19
Sf0780415	14	18.25242	-67.39925	7	-36.55	82.84	78.69	4.15	28
Sf0780415	15	18.25243	-67.39927	4	-42.04	82.84	79.28	3.56	14
Sf0780415	16	18.25244	-67.39930	7	-38.06	82.84	81.55	1.29	23
Sf0780415	17	18.25348	-67.40210	6	-36.18	91.28	87.77	3.51	29
Sf0780415	18	18.25350	-67.40233	4	-36.74	91.28	89.59	1.69	27
Sf0780415	19	18.25348	-67.40214	5	-41.22	91.28	89.80	1.48	16
Sf0780415	20	18.25346	-67.40195	4	-39.40	91.28	89.92	1.36	20
Sf0780415	21	18.25352	-67.40276	4	-33.38	90.19	87.88	2.31	41
Sf0780415	22	18.25350	-67.40231	4	-42.13	91.28	88.03	3.25	14
Sf0780415	23	18.24668	-67.39819	7	-38.91	73.12	69.33	3.79	21
Sf0780415	24	18.24663	-67.39814	4	-35.91	73.12	69.77	3.35	30

Appendix B. (Page 4 of 7) Individual fish location and sizes during the 2003 Survey.

Original File	Fish #	Latitude (dd)	Longitude (dd)	Echo Count	TS (dB)	Water Depth (m)	Dist. from Surf (m)	Dist. off Bot. (m)	Length (cm)
Sf0780415	25	18.23963	-67.39930	5	-36.61	76.18	71.55	4.63	27
Sf0780415	26	18.23959	-67.39924	4	-40.91	76.18	71.98	4.20	16
Sf0790316	18	18.07992	-67.83713	5	-40.92	54.54	51.09	3.45	16
Sf0790316	19	18.06777	-67.84007	5	-39.33	61.04	55.80	5.24	20
Sf0790316	20	18.06789	-67.84001	6	-41.43	61.04	56.73	4.31	15
Sf0790316	21	18.06793	-67.84000	4	-38.40	61.04	56.16	4.88	22
Sf0790316	23	18.06265	-67.84901	4	-34.49	29.58	29.81	-0.23	36
Sf0790316	24	18.05986	-67.85120	10	-34.94	43.75	39.28	4.47	34
Kf0781600	2	18.51564	-66.63274	6	-35.99	108.36	53.00	55.36	30
Kf0781600	3	18.51566	-66.63280	4	-39.82	108.36	54.39	53.97	19
Kf0781600	4	18.51479	-66.62847	3	-42.18	85.00	80.81	4.19	14
Kf0781600	6	18.51557	-66.63232	3	-35.73	90.41	79.39	11.02	31
Kf0781600	7	18.51550	-66.63182	4	-41.92	90.41	83.39	7.02	15
Kf0781600	8	18.51558	-66.63243	3	-33.21	90.41	78.91	11.50	41
Kf0781600	9	18.51601	-66.63411	9	-34.43	108.36	80.66	27.70	36
Kf0781600	10	18.51596	-66.63393	3	-32.85	108.36	89.22	19.14	43
Kf0781600	11	18.51593	-66.63379	3	-27.70	108.36	90.38	17.98	80
Kf0781543	4	18.50945	-66.60429	3	-42.71	63.99	58.80	5.19	13
Kf0781543	5	18.50945	-66.60429	3	-43.70	63.99	57.25	6.74	12
Kf0781543	6	18.51173	-66.61322	4	-44.51	85.42	76.95	8.47	11
Kf0781543	7	18.51173	-66.61322	4	-33.67	85.42	81.11	4.31	39
Kf0781543	8	18.51181	-66.61374	3	-41.44	85.42	84.00	1.42	15
Kf0781503	3	18.50451	-66.53976	3	-43.40	70.13	69.11	1.02	12
Kf0781503	4	18.50436	-66.53959	3	-42.85	70.13	65.27	4.86	13
Kf0781503	5	18.50895	-66.55736	7	-43.31	77.74	74.84	2.90	12
Kf0781503	6	18.50902	-66.55408	4	-38.04	114.69	99.27	15.42	23
Kf0781503	7	18.50855	-66.56448	5	-41.43	66.67	65.66	1.01	15
Kf0781503	8	18.50827	-66.57309	3	-42.32	58.98	57.36	1.62	14
Kf0781503	9	18.50767	-66.58964	3	-41.84	39.79	36.16	3.63	15
Kf0781503	10	18.50765	-66.59071	4	-44.86	38.90	37.77	1.13	10
Kf0781503	11	18.50728	-66.59271	3	-43.63	37.83	35.06	2.77	12
Kf0781503	12	18.50742	-66.59246	3	-41.31	37.83	32.81	5.02	16
Kf0781503	13	18.50699	-66.59314	6	-45.24	37.83	36.72	1.11	10
Kf0781415	1	18.49318	-66.46574	4	-39.01	80.82	76.48	4.34	21
Kf0781415	2	18.50194	-66.50667	3	-43.48	98.31	92.69	5.62	12
Kf0781415	3	18.50195	-66.50662	3	-43.58	98.31	95.63	2.68	12
Kf0781415	4	18.50173	-66.50779	5	-41.19	83.15	86.64	-3.49	16
Kf0781415	5	18.49965	-66.51752	4	-45.56	65.57	63.19	2.38	9
Kf0781400	2	18.51251	-66.44496	4	-41.20	98.01	104.06	-6.05	16
Kf0781400	3	18.51242	-66.44502	6	-44.10	98.01	102.89	-4.88	11
Kf0781400	4	18.49637	-66.46065	3	-37.12	59.81	57.66	2.15	26
Kf0781400	5	18.49636	-66.46066	4	-41.41	59.81	57.94	1.87	15
Kf0781400	6	18.49635	-66.46067	3	-37.69	59.81	58.28	1.53	24
Kf0781400	7	18.49630	-66.46073	6	-43.57	59.81	58.34	1.47	12
Kf0781300	5	18.50860	-66.36828	6	-45.33	84.36	82.11	2.25	10
Kf0781300	6	18.50840	-66.36786	4	-41.25	84.36	81.03	3.33	16
Kf0781300	7	18.50933	-66.38232	5	-44.71	79.56	82.98	-3.42	10
Kf0781300	8	18.50932	-66.38236	3	-44.28	79.56	81.81	-2.25	11
Kf0781300	9	18.50893	-66.38682	4	-43.41	65.51	60.92	4.59	12
Kf0781300	10	18.50605	-66.39986	4	-43.72	40.37	35.34	5.03	12
Kf0781300	11	18.50605	-66.39987	5	-43.14	40.37	36.81	3.56	13
Kf0781300	12	18.50891	-66.40475	5	-32.50	53.69	43.48	10.21	45
Kf0781300	13	18.50891	-66.40475	6	-40.42	53.69	44.11	9.58	17
Kf0781200	2	18.49303	-66.27917	7	-41.40	40.80	36.61	4.19	15
Kf0781200	3	18.50040	-66.29034	7	-40.20	51.24	45.89	5.35	18
Kf0781200	4	18.50132	-66.29428	7	-40.82	55.68	48.69	6.99	17
Kf0781200	5	18.50130	-66.29398	4	-35.01	55.68	53.61	2.07	33

Appendix B. (Page 5 of 7) Individual fish location and sizes during the 2003 Survey.

Original File	Fish #	Latitude (dd)	Longitude (dd)	Echo Count	TS (dB)	Water Depth (m)	Dist. from Surf (m)	Dist. off Bot. (m)	Length (cm)
Kf0781200	6	18.50255	-66.30286	10	-45.64	67.63	66.66	0.97	9
Kf0781200	7	18.50271	-66.30495	6	-40.10	109.87	80.98	28.89	18
Kf0781200	8	18.50307	-66.31903	5	-41.71	116.21	104.70	11.51	15
Kf0781200	9	18.50274	-66.32028	3	-43.30	81.74	79.59	2.15	12
Kf0781200	10	18.50146	-66.32548	3	-44.39	80.05	76.56	3.49	11
Kf0781200	11	18.50366	-66.33553	3	-40.15	122.37	115.95	6.42	18
Kf0781200	12	18.50365	-66.33551	3	-41.83	122.37	116.59	5.78	15
Kf0781200	13	18.50662	-66.34055	7	-38.67	72.77	73.72	-0.95	21
Kf0781200	14	18.50707	-66.34250	5	-41.56	69.88	65.34	4.54	15
Kf0781200	15	18.50852	-66.34452	5	-42.16	69.93	64.72	5.21	14
Kf0781200	16	18.50922	-66.34586	9	-41.25	70.21	64.64	5.57	16
Kf0781200	17	18.51064	-66.35563	3	-41.58	81.73	78.86	2.87	15
Kf0781200	18	18.51063	-66.35577	3	-43.15	81.73	78.69	3.04	12
Kf0781200	19	18.51063	-66.35577	6	-43.27	81.73	79.45	2.28	12
Kf0781200	20	18.51052	-66.35680	6	-46.38	83.25	80.14	3.11	8
Kf0781200	21	18.51025	-66.35821	6	-43.95	84.40	80.34	4.06	11
Kf0781200	22	18.51000	-66.35909	4	-40.91	84.40	84.67	-0.27	16
Kf0781200	23	18.50948	-66.36005	5	-42.31	84.16	80.19	3.97	14
Kf0781200	24	18.50949	-66.36001	4	-44.63	84.16	81.11	3.05	10
Kf0781200	25	18.50943	-66.36020	4	-43.60	84.16	81.97	2.19	12
Kf0781200	26	18.50940	-66.36031	3	-41.75	84.16	80.25	3.91	15
Kf0781200	27	18.50947	-66.36007	4	-44.28	84.16	81.06	3.10	11
Kf0781200	28	18.50975	-66.35958	3	-42.27	84.16	81.86	2.30	14
Kf0781200	29	18.51003	-66.35900	4	-44.01	84.40	82.41	1.99	11
Kf0781200	30	18.50987	-66.35939	6	-44.31	84.16	83.52	0.64	11
Kf0781200	31	18.50987	-66.35939	4	-43.72	84.16	84.22	-0.06	12
Kf0781031	1	18.49624	-66.16036	10	-33.76	77.19	70.44	6.75	39
Kf0781031	2	18.49662	-66.18898	3	-44.88	109.61	94.64	14.97	10
Kf0781031	3	18.49645	-66.18915	5	-41.14	109.61	89.25	20.36	16
Kf0791700	1	18.42940	-67.17383	7	-38.81	82.58	68.39	14.19	21
Kf0791700	2	18.42657	-67.17720	4	-45.57	77.85	67.69	10.16	9
Kf0791600	4	18.50241	-67.18166	7	-42.15	75.72	68.55	7.17	14
Kf0791600	5	18.50174	-67.18131	6	-43.94	75.72	70.88	4.84	11
Kf0791600	6	18.50178	-67.18133	5	-43.94	75.72	70.77	4.95	11
Kf0791600	7	18.49544	-67.17802	7	-37.25	54.89	45.77	9.12	25
Kf0791600	8	18.50256	-67.18176	6	-38.40	75.72	52.81	22.91	22
Kf0791600	9	18.49789	-67.17924	5	-38.07	58.29	57.89	0.40	23
Kf0791600	10	18.49458	-67.17779	6	-43.06	53.02	46.30	6.72	13
Kf0791600	11	18.49194	-67.17728	6	-44.39	50.39	46.47	3.92	11
Kf0791600	12	18.48587	-67.17862	4	-43.53	109.58	90.55	19.03	12
Kf0791600	13	18.48610	-67.17851	4	-46.57	109.58	87.88	21.70	8
Kf0791600	14	18.48584	-67.17863	5	-42.81	109.58	92.58	17.00	13
Kf0791600	15	18.47953	-67.18120	6	-41.56	103.46	99.72	3.74	15
Kf0791600	16	18.47993	-67.18106	3	-42.11	103.46	102.55	0.91	14
Kf0791521	28	18.57255	-67.22669	6	-33.96	119.66	48.89	70.77	38
Kf0791521	29	18.57012	-67.22458	7	-40.90	63.62	59.00	4.62	16
Kf0791521	30	18.57165	-67.22589	6	-43.98	80.69	75.06	5.63	11
Kf0791521	31	18.57166	-67.22589	4	-45.71	80.69	76.13	4.56	9
Kf0791521	32	18.57288	-67.22693	6	-43.37	119.66	94.69	24.97	12
Kf0791521	33	18.56345	-67.21951	4	-39.47	59.89	54.98	4.91	19
Kf0791521	34	18.56366	-67.21967	7	-42.19	59.89	54.25	5.64	14
Kf0791521	35	18.56356	-67.21959	3	-42.72	59.89	53.38	6.51	13
Kf0791521	36	18.56362	-67.21963	4	-41.73	59.89	54.70	5.19	15
Kf0791521	37	18.56352	-67.21955	6	-44.25	59.89	54.05	5.84	11
Kf0791521	38	18.55812	-67.21557	5	-40.13	60.93	55.88	5.05	18
Kf0791521	39	18.55815	-67.21559	5	-38.44	60.93	53.84	7.09	22
Kf0791521	40	18.55665	-67.21407	8	-41.54	60.55	55.06	5.49	15

Appendix B. (Page 6 of 7) Individual fish location and sizes during the 2003 Survey.

Original File	Fish #	Latitude (dd)	Longitude (dd)	Echo Count	TS (dB)	Water Depth (m)	Dist. from Surf (m)	Dist. off Bot. (m)	Length (cm)
Kf0791521	41	18.55658	-67.21396	6	-46.31	60.55	54.58	5.97	9
Kf0791521	42	18.53064	-67.19548	6	-37.05	149.60	110.16	39.44	26
Kf0791301	2	18.55930	-67.02894	5	-44.11	74.25	70.22	4.03	11
Kf0791301	4	18.55917	-67.03154	4	-41.96	72.42	69.84	2.58	14
Kf0791301	5	18.56046	-67.03833	8	-32.87	72.97	57.91	15.06	43
Kf0791301	6	18.56117	-67.04080	5	-43.50	70.69	67.59	3.10	12
Kf0791301	7	18.56121	-67.04088	3	-45.08	70.69	66.98	3.71	10
Kf0791301	8	18.56122	-67.04091	3	-43.12	70.69	66.78	3.91	13
Kf0791301	9	18.56317	-67.04301	6	-42.46	78.81	70.42	8.39	14
Kf0791301	10	18.56294	-67.04298	4	-42.08	78.81	69.95	8.86	14
Kf0791301	11	18.56300	-67.04299	3	-42.15	78.81	70.41	8.40	14
Kf0791301	12	18.56328	-67.04301	6	-37.04	78.81	72.14	6.67	26
Kf0791301	13	18.56328	-67.04301	4	-43.58	78.81	75.70	3.11	12
Kf0791301	14	18.56425	-67.04383	10	-29.07	83.76	73.19	10.57	68
Kf0791301	15	18.56428	-67.04392	3	-31.41	83.76	73.81	9.95	51
Kf0791301	16	18.56622	-67.04905	7	-45.20	92.75	91.25	1.50	10
Kf0791301	17	18.56667	-67.04932	6	-37.92	119.18	103.94	15.24	23
Kf0791301	18	18.56696	-67.04941	4	-45.34	119.18	111.63	7.55	10
Kf0791301	19	18.56710	-67.04950	5	-44.55	119.18	113.28	5.90	11
Kf0791301	20	18.56941	-67.06401	4	-42.28	137.92	129.69	8.23	14
Kf0791301	21	18.56940	-67.06388	4	-40.41	137.92	127.03	10.89	17
Kf0791301	22	18.56940	-67.06386	4	-42.34	137.92	126.14	11.78	14
Kf0791301	23	18.56942	-67.06373	4	-44.15	137.92	129.44	8.48	11
Kf0791301	24	18.56942	-67.06409	5	-40.45	137.92	134.55	3.37	17
Kf0791301	25	18.56940	-67.06397	3	-40.98	137.92	129.66	8.26	16
Kf0791301	26	18.56948	-67.06450	3	-41.24	137.92	134.11	3.81	16
Kf0791230	2	18.54373	-66.99246	3	-32.38	81.00	76.59	4.41	46
Kf0791230	3	18.54297	-66.99215	3	-34.30	81.00	69.84	11.16	36
Kf0791230	4	18.54597	-66.99640	6	-44.96	76.71	72.72	3.99	10
Kf0791230	5	18.54598	-66.99642	3	-42.69	76.71	73.38	3.33	13
Kf0791230	6	18.56077	-67.01979	3	-38.00	121.16	111.03	10.13	23
Kf0791200	1	18.51133	-66.96245	5	-40.07	149.58	136.89	12.69	18
Kf0791200	2	18.53025	-66.98749	8	-39.79	85.07	80.17	4.90	19
Kf0791200	3	18.53022	-66.98748	5	-43.14	85.07	79.80	5.27	13
Kf0791200	4	18.53117	-66.98800	9	-40.09	84.13	79.47	4.66	18
Kf0791200	5	18.53132	-66.98809	4	-42.13	84.13	80.50	3.63	14
Kf0791200	6	18.53113	-66.98799	6	-44.52	84.13	80.09	4.04	11
Kf0791200	7	18.53119	-66.98802	4	-41.08	84.13	79.16	4.97	16
Kf0791200	8	18.53549	-66.99007	3	-43.95	79.63	72.94	6.69	11
Kf0791200	9	18.53563	-66.99014	6	-39.39	79.63	76.73	2.90	20
Kf0791200	10	18.53449	-66.98974	6	-43.03	78.00	76.14	1.86	13
Kf0791200	11	18.53566	-66.99015	5	-38.63	79.63	77.31	2.32	22
Kf0791200	12	18.53549	-66.99007	6	-38.13	79.63	72.06	7.57	23
Kf0791101	6	18.50788	-66.87738	9	-39.48	64.00	58.56	5.44	19
Kf0791101	7	18.50940	-66.87123	7	-44.76	66.40	59.33	7.07	10
Kf0791101	8	18.50955	-66.87144	4	-43.40	66.40	61.44	4.96	12
Kf0791101	9	18.50801	-66.87681	9	-44.24	64.00	57.88	6.12	11
Kf0791101	10	18.50856	-66.87505	10	-42.67	65.58	63.14	2.44	13
Kf0791101	11	18.50934	-66.87324	3	-43.28	66.01	62.03	3.98	12
Kf0791101	12	18.50715	-66.88020	4	-41.41	60.69	55.31	5.38	15
Kf0791101	13	18.50856	-66.89178	6	-41.92	114.28	86.67	27.61	15
Kf0791101	14	18.50851	-66.89174	3	-41.72	114.28	84.73	29.55	15
Kf0791101	15	18.51128	-66.89553	4	-40.67	149.62	100.38	49.24	17
Kf0791101	16	18.51128	-66.89550	5	-38.17	149.62	101.23	48.39	23
Kf0791101	17	18.51128	-66.89553	3	-41.17	149.62	100.91	48.71	16
Kf0791101	18	18.50914	-66.89220	4	-38.93	114.28	116.33	-2.05	21
Kf0791101	19	18.50869	-66.94711	5	-42.90	71.71	67.47	4.24	13

Appendix B. (Page 7 of 7) Individual fish location and sizes during the 2003 Survey.

Original File	Fish #	Latitude (dd)	Longitude (dd)	Echo Count	TS (dB)	Water Depth (m)	Dist. from Surf (m)	Dist. off Bot. (m)	Length (cm)
Kf0791101	20	18.50870	-66.94708	3	-45.41	71.71	65.36	6.35	10
Kf0791101	21	18.50849	-66.94782	6	-42.41	70.05	67.48	2.57	14
Kf0791101	22	18.50882	-66.94666	3	-43.37	71.71	68.75	2.96	12
Kf0791101	23	18.50743	-66.95289	4	-42.30	68.52	67.14	1.38	14
Kf0791101	24	18.50838	-66.95565	3	-41.61	71.95	67.75	4.20	15
Kf0791030	1	18.51297	-66.82401	7	-41.57	78.91	57.59	21.32	15
Kf0791030	2	18.51287	-66.82314	5	-40.20	78.91	60.27	18.64	18
Kf0791030	3	18.51287	-66.82301	4	-35.29	78.91	61.52	17.39	32
Kf0791030	4	18.51288	-66.82320	4	-41.46	78.91	59.89	19.02	15
Kf0791030	5	18.51303	-66.83605	3	-43.95	69.17	65.42	3.75	11
Kf0791030	6	18.51303	-66.83604	3	-41.56	69.17	65.73	3.44	15
Kf0791030	7	18.51093	-66.86079	5	-42.91	67.19	64.69	2.50	13
Kf0791030	8	18.50968	-66.86816	9	-39.99	66.31	60.34	5.97	18
Kf0791030	9	18.50953	-66.86878	4	-41.89	66.31	60.73	5.58	15
Kf0791000	1	18.51373	-66.80950	5	-43.06	116.45	120.56	-4.11	13
Kf0791000	2	18.51375	-66.80943	3	-43.23	116.45	120.50	-4.05	12
Kf0791000	3	18.51278	-66.81717	4	-36.86	84.19	77.64	6.55	27
Kf0790900	8	18.49995	-66.71054	3	-40.43	99.07	89.38	9.69	17
Kf0790900	9	18.50021	-66.70994	9	-37.81	99.07	90.63	8.44	24
Kf0790837	1	18.51012	-66.66637	3	-32.57	134.20	112.59	21.61	45
Kf0790837	2	18.51013	-66.66620	3	-38.22	148.95	108.36	40.59	23
Kf0790837	3	18.51012	-66.66630	4	-37.75	134.20	108.53	25.67	24
Kf0790837	4	18.51012	-66.66637	4	-32.22	134.20	109.02	25.18	47
Kf0790837	5	18.50999	-66.66750	4	-34.59	134.20	123.14	11.06	35
Kf0790837	6	18.50998	-66.66760	4	-39.55	134.20	118.45	15.75	19
Kf0790837	7	18.50998	-66.66755	6	-41.74	134.20	120.98	13.22	15
Kf0790837	8	18.51000	-66.66747	4	-42.65	134.20	125.52	8.68	13
Kf0790837	9	18.50999	-66.66750	4	-38.48	134.20	122.61	11.59	22
Kf0790837	10	18.50998	-66.66763	4	-33.33	134.20	122.05	12.15	41
Kf0790837	11	18.50998	-66.66759	6	-40.55	134.20	117.41	16.79	17
Kf0790837	12	18.50995	-66.66780	4	-36.35	134.20	120.03	14.17	28
Kf0790837	13	18.50972	-66.66976	7	-40.47	99.98	99.69	0.29	17
Kf0790837	14	18.50969	-66.66997	3	-43.67	99.98	98.38	1.60	12
Kf0790837	15	18.50955	-66.67099	6	-36.54	99.98	93.81	6.17	28
Kf0790837	16	18.50944	-66.67180	7	-41.27	93.04	90.53	2.51	16
Kf0790837	17	18.50752	-66.68223	10	-35.21	91.09	88.86	2.23	33
Kf0790837	18	18.50805	-66.68070	5	-44.98	89.34	87.09	2.25	10
Kf0790837	19	18.50752	-66.68224	3	-36.70	91.09	90.22	0.87	27
Kf0790837	20	18.50700	-66.68365	9	-35.43	93.84	77.89	15.95	32